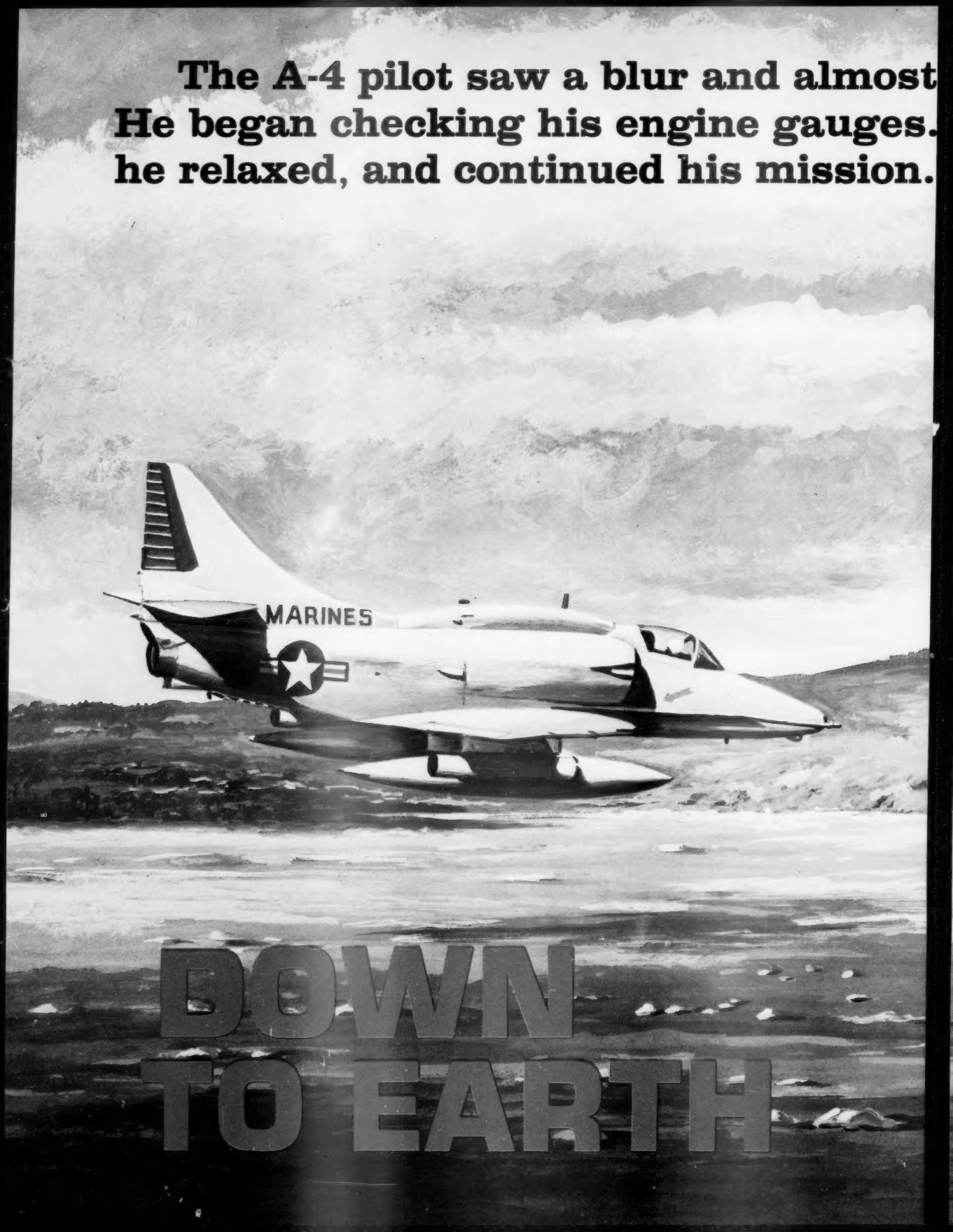
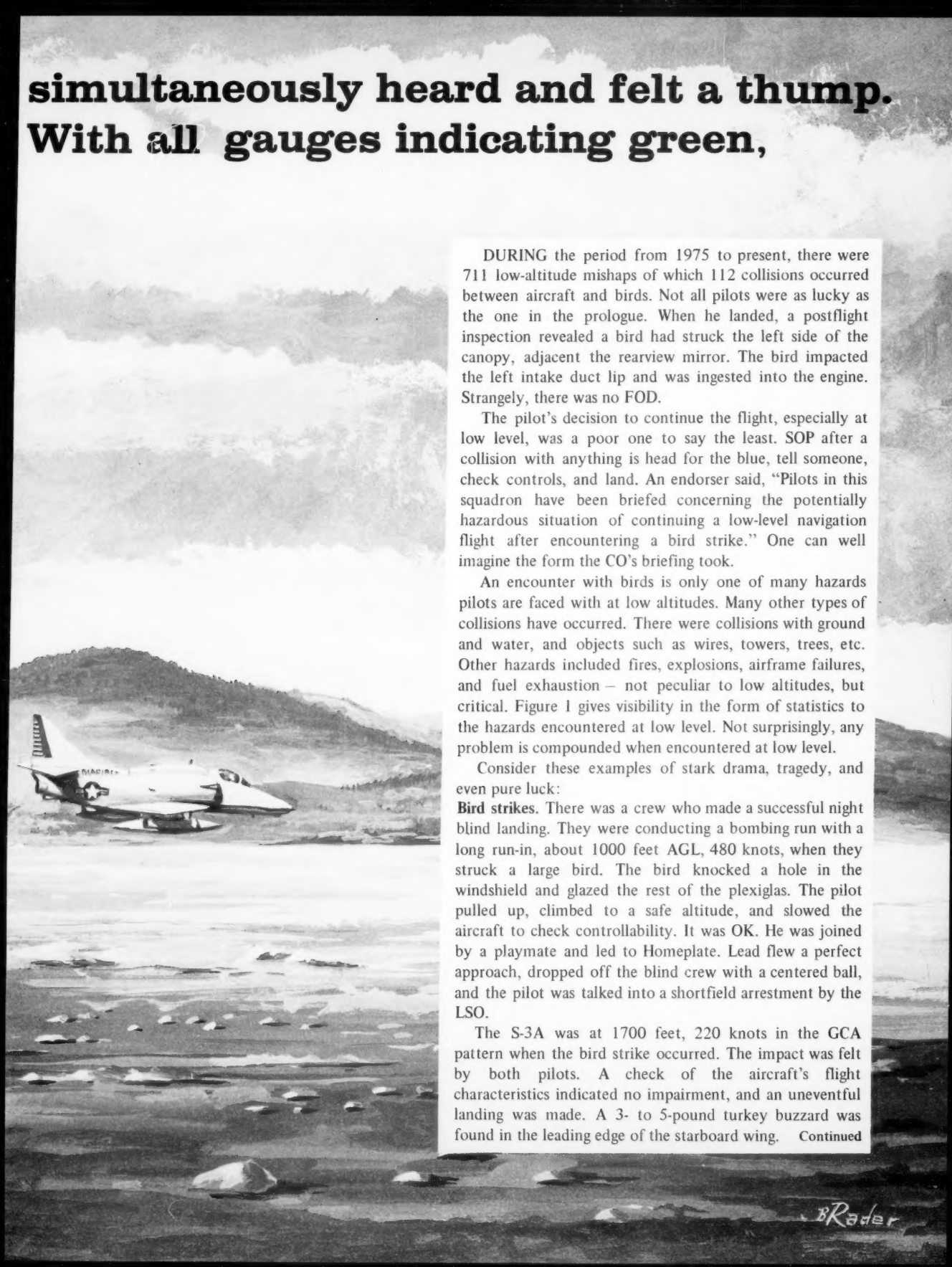
approach

OCTOBER 1978 THE NAVAL AVIATION SAFETY REVIEW

The A-4 pilot saw a blur and almost
He began checking his engine gauges.
he relaxed, and continued his mission.



simultaneously heard and felt a thump. With all gauges indicating green,



DURING the period from 1975 to present, there were 711 low-altitude mishaps of which 112 collisions occurred between aircraft and birds. Not all pilots were as lucky as the one in the prologue. When he landed, a postflight inspection revealed a bird had struck the left side of the canopy, adjacent the rearview mirror. The bird impacted the left intake duct lip and was ingested into the engine. Strangely, there was no FOD.

The pilot's decision to continue the flight, especially at low level, was a poor one to say the least. SOP after a collision with anything is head for the blue, tell someone, check controls, and land. An endorser said, "Pilots in this squadron have been briefed concerning the potentially hazardous situation of continuing a low-level navigation flight after encountering a bird strike." One can well imagine the form the CO's briefing took.

An encounter with birds is only one of many hazards pilots are faced with at low altitudes. Many other types of collisions have occurred. There were collisions with ground and water, and objects such as wires, towers, trees, etc. Other hazards included fires, explosions, airframe failures, and fuel exhaustion – not peculiar to low altitudes, but critical. Figure 1 gives visibility in the form of statistics to the hazards encountered at low level. Not surprisingly, any problem is compounded when encountered at low level.

Consider these examples of stark drama, tragedy, and even pure luck:

Bird strikes. There was a crew who made a successful night blind landing. They were conducting a bombing run with a long run-in, about 1000 feet AGL, 480 knots, when they struck a large bird. The bird knocked a hole in the windshield and glazed the rest of the plexiglas. The pilot pulled up, climbed to a safe altitude, and slowed the aircraft to check controllability. It was OK. He was joined by a playmate and led to Homeplate. Lead flew a perfect approach, dropped off the blind crew with a centered ball, and the pilot was talked into a shortfield arrestment by the LSO.

The S-3A was at 1700 feet, 220 knots in the GCA pattern when the bird strike occurred. The impact was felt by both pilots. A check of the aircraft's flight characteristics indicated no impairment, and an uneventful landing was made. A 3- to 5-pound turkey buzzard was found in the leading edge of the starboard wing. **Continued**

VSTOL
ATTACK
TRANSPORT
EARLY WARNING
FIGHTERS
HELO
PATROL
ASW
TRAINER
TOTALS

This S-3's leading edge (now folded) encountered the bird while in the landing pattern.

Low-level navigation. Lead was tooling along at 500 feet, moving fast, and Chase was above and behind. At a point along the way, weather forced both aircraft to climb to stay in VMC. Lead headed higher, and Chase entered a close parade position. Despite their intentions to stay out of clouds, they entered clouds at 3500 feet. Chase transmitted he had lost contact, broke to starboard, and nosed up to clear hills ahead. Lead replied, "OK, I'll see ya on top." Lead broke out at 9000 feet and was about to ask Chase where he was when Lead heard a one-word transmission and a 3-second emergency beacon. Chase never made it. His aircraft crashed at 4500 feet, on a 60-degree upslope, in a nose-low, starboard-wing-down attitude.

Six months after the previous crash, another section was on a low-level NAV flight. Lead was low; Chase, the checkpilot, was above him. Lead had been doing a great job on his check until he approached a prominent checkpoint. Lead wasn't able to determine his exact position relative to a tower and struck the tower with his port wing tip. Lead didn't crash, but the aircraft did incur substantial damage. Both pilots knew about the tower. It was depicted on the chart as 300 feet high, but was hard to see because of light conditions and faded paint. Chase didn't advise Lead to climb, nor did Lead ease it up in an area where there was a known obstruction.

Within a few days another section had a problem when Lead deviated from the intended flightpath due to deteriorating weather. While flying through a valley, Lead spotted a cable stretched between ridges and told his wingie about it. Five minutes later, after one complete orbit before resuming course, and while climbing over a ridge line, Lead contacted the cable, inflicting a vertical cut through his leading edge flap and about 12 inches into the main wing panel. Fuel began streaming out. However, he made it to Homeplate and the aircraft received minor damage.

Another pilot is lucky to be alive. He was flying on a published low-level NAV route in the mountains. He was at 500 feet when he entered turbulence so severe that he

1975 - 1978 Low-Level Summary

DAMAGE			INJURY			MISHAP CAUSE FACTORS					MISHAP TYPES			
A	C	D-F	A	B	F	Pilot	Other Pers.	Mtl.	Bird Strikes	Other	Collisions*	Airframe Failures	System Failures	Other
5	1	11	1	1	1	2	1	9	3	2	6	2	6	3
10	4	180	2	2	4	12	24	72	69	17	77	13	64	40
4	0	41	32	4	0	0	9	35	1	0	3	2	36	5
1	0	10	0	2	0	1	1	9	1	0	0	2	9	0
15	0	36	5	2	2	1	10	29	3	8	0	1	28	22
14	4	193	18	9	7	12	35	148	9	7	26	27	122	35
0	0	75	0	0	0	0	9	46	16	4	16	4	50	5
1	0	56	2	0	0	2	5	47	3	0	3	0	48	6
5	2	43	3	4	1	4	3	33	8	2	10	2	29	9
55	11	645	63	24	15	34	97	428	113	40	141	53	392	125

*Ground/Water/Other

Fig. 1

almost lost complete control of his aircraft. His accelerometer varied between +4 and -2, and he spent a lot of time against his lap and shoulder restraints. He even cracked the canopy with his helmet. When he entered a momentary smooth area, he pointed the nose of his aircraft at the sky, cobbed the power, and deviated around high terrain. His weather brief contained no mention of turbulence or hazardous conditions; yet, at the time of his brief there was a Sigmet in affect for the area. Another aircraft flying the same route, 15 minutes later, disintegrated in the air, and that pilot was killed.

Pattern. The attack aircraft was hot-seated by the pilot, but the B/N remained in the aircraft from the previous flight. The two had not flown together, and no emergency brief was conducted. Subsequently, when cockpit coordination was needed, there was none. A firewarning light came on in the pattern, and the throttle was first retarded, then secured. The aircraft developed an uncontrollable sink rate even though military power was used on the good engine

and fuel dump was on. The B/N advised the pilot they had a steady firewarning light. At 200 feet, the pilot ejected successfully, but the B/N didn't go. The aircraft crashed and exploded on impact.

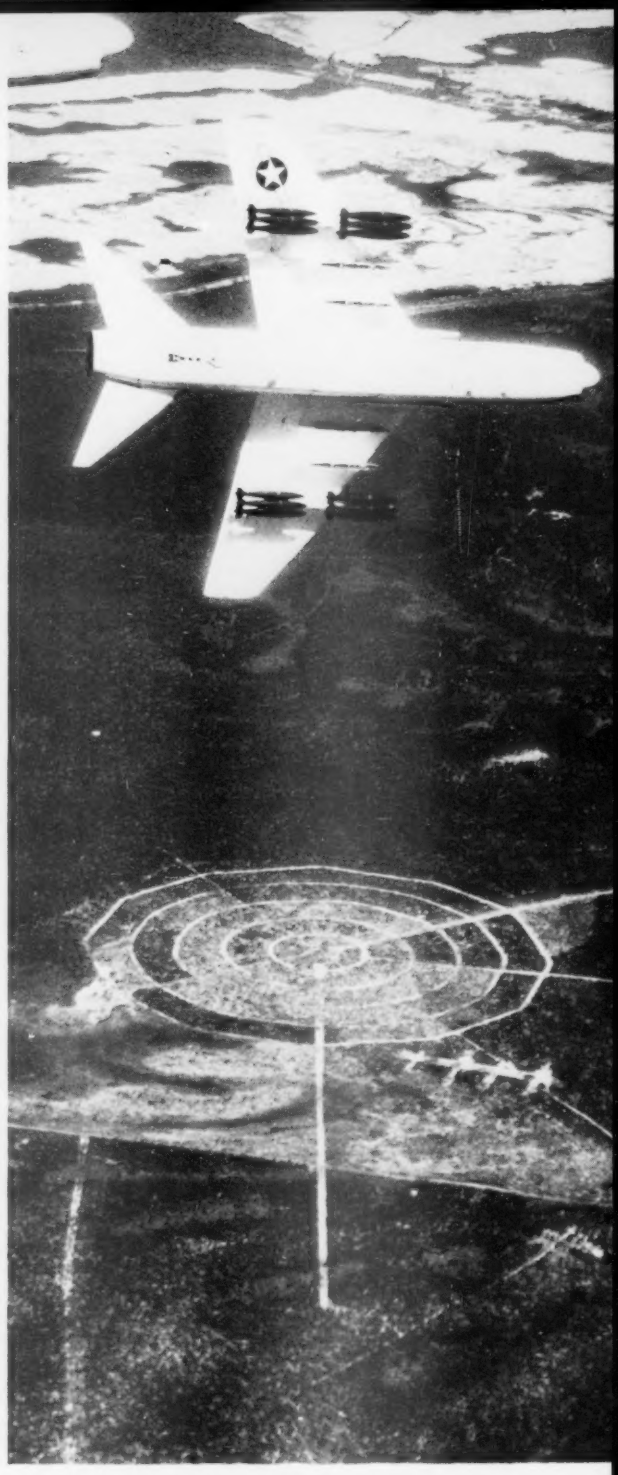
During a night GCA, two pilots were alternating approaches. The pilot at the controls executed a waveoff at 100 feet, climbed to 500 feet in a right turn (published missed approach), and then saw two white lights of a departing aircraft. The departing aircraft was 5 miles out and opening. The pilot of the GCA aircraft didn't check his instruments, and while continuing his turn, allowed the aircraft to descend and start clipping treetops. Both pilots ejected OK, but the aircraft was destroyed.

Takeoff, particularly at night, can become hairy. If a pilot is the least bit casual or careless, it's easy to end up as another statistic. When leaving the lighted confines of a runway, with lots of visual cues, pilots know there's a black hole at the end of the runway. The pilot of a four-engine aircraft lifted off normally one night. After the gear was raised, the landing lights of the aircraft were turned off. No one will ever know why, but the aircraft didn't climb any higher than 100 feet and flew into the water about 1 mile from the runway end. No one survived.

Bombing pattern. It was a 10-plane coordinated alpha strike, and the high-low flight profile was uneventful. A division swept smoothly into a port turn to roll out on a heading of 360 degrees. The division was to assume a spread position, aircraft in a line abreast, and attack individual prebriefed targets. Three targets were on an east-west line about 1000 meters apart. Lead was to bomb the center target; No. 2 was to bomb the west target; and No. 3 had the east target. The aircraft rolled into their runs, and No. 2 didn't see his target. He picked a hill which looked likely and headed for it. He buried his head in the cockpit momentarily, then looked up just as Lead dropped his ordnance. When Lead dropped, No. 2 was in trail and flew through the concussion and shrapnel from Lead's load. Others called No. 2 after he released his ordnance and told him he was streaming fuel. Fortunately, there was an emergency field nearby and No. 2 landed safely.

Material Failure. It is evident from Fig. 1 that there were many mishaps caused by material failure/malfunction. For example, a helicopter crew, flying at 500 feet, heard a loud pop followed by wild gyrations of the aircraft. With little control of the aircraft, the pilot stayed with it and was able to slow down before crashing into the water. The entire crew survived. DIR revealed a failure of mounting lugs due to fatigue.

On a night GCA, the pilot waved off when he didn't have the deck in sight at minimums. On the downwind leg of another approach, the main transmission and rotor system departed the aircraft. There were no survivors.



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Investigation revealed a door assembly separated from the airframe and passed through the rotor system.

A helo crew was flying a gun mission. At 300 feet AGL, the aircraft pitched uncontrollably up. The pilot tried to lower the nose with cyclic and to secure the servo systems with no success. He then dumped collective, and the nose went excessively low. He was also able to slow down before crashing on a 60-degree upslope. No one died, but there were multiple injuries. The cause was a malfunction of the auxiliary servo system induced by maintenance error. (There had been no QA inspection after cannibalization work, and on the PMCF the test pilot had failed to check the servo installation.)

Delta Sierra. After takeoff in VMC the pilot requested a left turn out, but was denied due to a restricted area. He had already begun a left, climbing turn while transmitting, but when his request was denied, rolled into a right nose-high turn. The aircraft stalled and crashed.

Then there was a pilot, on a fam flight, who simulated a gun run, failed to recover, and flew his aircraft into trees and bushes. The aircraft was a strike, but the pilot and the other crewmember survived.

Two pilots and a crewman took off and climbed just enough to follow the contour of the terrain. They disappeared from sight behind a hill, reappeared a mile or so down the road, and began assorted turns and whifferdills between the surface and 50 feet. The pilot didn't recover from one maneuver and killed everyone aboard. Both pilots had been in a duty status for 18 of the last 24 hours, with no more than a couple of hours sleep.

Summary. There are so many kinds of low-level hazards, all designed to terminate flight abruptly, that pilots need to be on the *qui vive* constantly. Please, no goofing off down low! Emergencies which occur when you're close to Mother Earth frequently leave precious little time to analyze a problem and follow prescribed procedures. You must know your NATOPS procedures and have *planned* your actions in advance of an emergency.

In the time available at 500 feet or less, your choice is more like a snap decision and reaction to a situation – unlike the same problem at altitude which might permit discussion and even a peek at the PCL (Pocket Checklist). For example, a pilot could inadvertently shut down an engine during an ACM high-speed turn and would have plenty of time for a relight. However, have him do the same thing in the pattern, as one did, and it means probable ejection or worse.

Pilots on ordnance delivery flights need to follow SOP to the letter. There were numerous examples of pilots flying through bomb fragmentation patterns or being zapped by ricocheting ordnance because they were in too close an interval, at the wrong angle, or flew below the minimum release altitude.

Low-altitude flights place unusual demands upon the Mk-1 Mod 0 eyeballs. Pilots are taxed to recognize landmarks, targets, and, particularly, hazards. Orientation and navigation are two chief problems on low-level missions. At low levels, pilots must learn to deal with a different visual environment so they can perform functions automatically – such as control of the aircraft, monitor gages with a glance, interpret avionics displays, communicate, and expend armament.

Thorough planning and a good brief can mean the difference between a successful mission and tragedy, especially for the inexperienced aviator. It is the unexpected and unfamiliar that usually pose the greatest hazards. The weather brief can be critical. Pay particular attention to fog areas, thick haze, turbulence, and thunderstorm activity. Study the terrain maps. Don't be

caught by obstacles that appear without warning. Familiarity with the terrain will be invaluable if a divert is necessary because of weather or mechanical problems.

Generally, pilots need more and more practice in reading maps displaying terrain features and choosing various flightpaths. Building confidence before getting in the cockpit is important. A pilot must learn pilotage techniques, relate to what he sees with the map he's using, and rely heavily on map recall. Thus, thorough ground training should be an integral part of any low-level training. Then, as a squadron CO said, "The only way to become proficient at low levels is to get out and fly low level."

In general, pilots flying at low altitudes must be extra alert. Continuous vigilance is the key. There is no room for error. There is no place for casual or sloppy flying. There is no time to bury one's head in the cockpit. Above all, pilots are cautioned to avoid distraction. The five rules of successful low-level flights are aviate, aviate, aviate, navigate, communicate.

Operation FLAILEX

By R. F. Wnek
HMM-262

I AM certain that any helo pilot who has been on an extended Med or WESTPAC cruise has enough sea stories and personal hair-raising accounts to keep a barroom bull session going uninterrupted from one happy hour to the next. Some are death-defying feats requiring a pilot's unequaled skill as a "good stick" to save the day. Others are the step-by-step accounts of involvement in a situation where he methodically eliminates all of his options to the point where he runs out of altitude and airspeed with the runway nowhere in sight. The following incidents relate events that happened to a squadron which, due to a considerable amount of experience and sheer luck, averted what could have been a disaster. What started as a simple LPH offload soon turned into Operation FLAILEX.

The LPH had steamed into an anchorage in the morning to allow the squadron to offload. It was a field that had no established tower (a hand-held FM radio operated by personnel from the DASC unit served as a tower), no navaids, and no lighting. The initial frags required several cargo/passenger runs between several bases.

Aircraft began shuttling around 0800. The weather forecaster predicted an overcast morning in the general area with broken/overcast ceilings around 3500 feet, followed by drizzle and rain at about 1400, and then becoming socked in between 1600 and 1700 with low ceilings and possible sleet and snow for the remainder of the day. The freezing level would be about 2500 feet at noon and gradually descend to the deck toward evening.

For the first part of the day, the offload was conducted smoothly without incident. Most sorties were conducted over a 35 nm round trip from the beach to camp which was 2500 feet MSL.

The weather gradually deteriorated from 4000 feet broken and haze at 0800, to an estimated 2500 feet broken with light rain and thick haze at noon. As heavier showers developed in the early afternoon, aircraft were flying around the cells, and visibility at times dropped to about a mile or less. At camp, the ceiling was under 200 feet in light rain.

There were three CH-53s and four CH-46s conducting the offload. All aircraft topped off together at the ship and began a daisy chain to camp with about a mile separation between aircraft. As they passed a point inbound to camp, the pilots could see the ceiling on the deck at the camp's field boundaries. Two lead CH-46s managed to see the runway and landed immediately. However, at this point, it was each aircraft for itself.

Radio calls from the remaining three CH-53s and two CH-46s all stated various intentions, including the following:

"Departing South, climbing for an IFR clearance . . . "

"ET-05, is that you north of the runway?"

"02 is over the reservoir, south of the runway."

"Have the field in sight."

"Tower, do you have contact with 31?"

One aircraft floundered to the west and north of the field over the camp's tactical ranges. It was about to land in the middle of one when they spotted the numerous quonset huts and the adjoining runway. They stated their intentions to the tower and landed directly on the runway. Before they landed, they saw another H-46 and an H-53 through the rain only a few hundred meters away. Soon after, the field went 0/0 and just as the forecaster had predicted, it began to sleet, then snow. For those who landed, the day was over. However, for those who had to return to the ship, the day was just beginning.

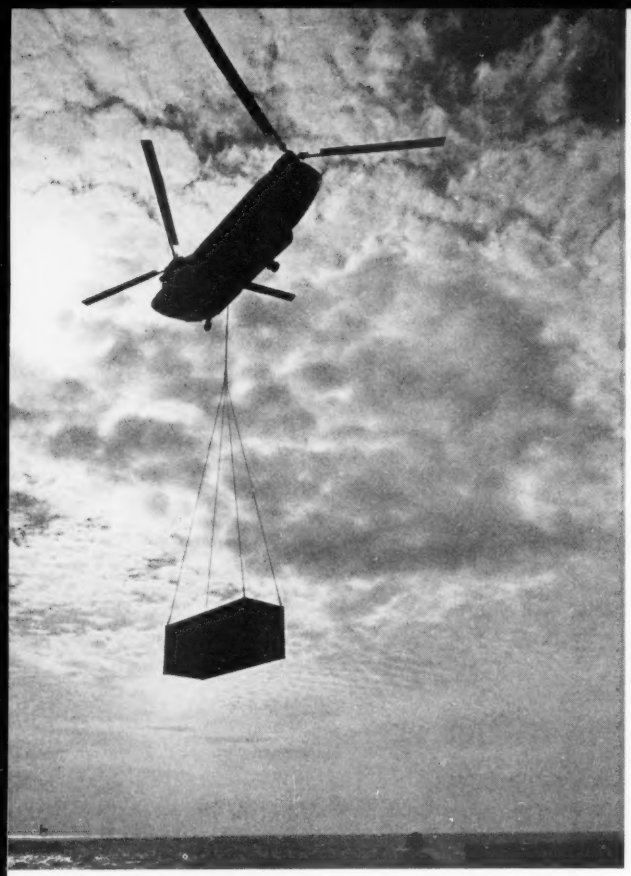
As the aircraft returned to the ship, they were shut down in hope of the weather improving in the camp area. But because the ship was scheduled to depart that evening, a decision was made to shuttle the remaining cargo to the beach since weather was apparently getting worse.

By now, several of the crews were reaching 8 hours flight time, but a waiver was granted by the operations officer and the offload began.

As darkness approached, HDC (helicopter direction control) decided to launch the remaining aircraft to an air facility under special VFR clearance. The aircraft were to proceed in two divisions; one division made up of three CH-46s, and the other division made up of two CH-53s and one CH-46. The two CH-46s participating in the offload to the beach were briefed while airborne to proceed to the air facility at once. The third CH-46 of this first division was onboard a support ship refueling and was told to join up on the other two CH-46s.

The following clearance was given: "You are to proceed to the air facility special VFR, follow the coast until you get to a checkpoint, then turn left and proceed to destination. Try and stay at 500 feet. Read back."

The weather was now 300 to 500 feet, 2-3 miles in rain



showers. The freezing level was approximately 2000 feet. As one pilot said, they were so happy to be off the ship and to spend the evening at destination that they fell in like little sheep.

Shortly after takeoff, the aircrews soon realized that the weather and visibility were deteriorating as rapidly as nightfall was approaching. The flight continued along the coast, following the lights and using the rotators of the aircraft in front to provide separation.

The first TACAN lock-on was 38 nm, approximately 1 hour after takeoff. However, the flight encountered a rainstorm, and reference with the coast was lost. The lead slowed, and Dash 2, realizing a fast closure rate, turned left to stay well clear of him and overflew him. Dash 3, realizing what was happening, attempted to maintain eye contact with Dash 2 and also turned left. Dash 3 initiated the turn at 400 feet AGL, 100 KIAS. The copilot called out altitudes as the aircraft turned – "300 feet, 200 feet, 100 feet, 25 feet. *Pull power*!" With his hand on the collective, he initiated a pullout at 25 feet, 20 KIAS, and extreme nose-low position.

The pilot later stated that if it hadn't been for the glare of lights on the water he probably would have flown into the ocean. Even with the copilot's verbal cueing, the pilot admitted he could hear what was happening but it wasn't registering. Dash 3 soon caught sight of Dash 2 and together they turned and fell behind Dash 1 again.

The lead aircraft navigated by the coastline, and Dash 2 relayed TACAN positions since they had the only operable TACAN in the flight. Lead called the tower and requested strobe lights to be turned on. The flight turned inbound on about the 200-degree radial and flew north, picking up the strobe lights about 1 to 2 miles out. The flight landed on the duty with one crew logging 11.0 hours of flight time that day.

The second division took off approximately 10 minutes after the first division. They received the same clearance, and they encountered much the same conditions. The SAR CH-46 was told to join up with two CH-53s participating in the offload and proceed special VFR to destination. As the CH-46 joined up with the H-53s, the crew was asked over the air if they had flown this route. The H-46 pilot answered that he was not familiar with this side of the peninsula, but he had flown the west side of the peninsula. The H-53 crew replied that it was more than they had seen and that the H-46 crew had the lead. The flight joined and proceeded at 500 feet or below – hugging the coastline.

At one point, the lead aircraft flew into a small, bleak harbor resulting in evasive maneuvers to remain clear of obstructions. Only after the landing lights were turned on were the aircraft able to rejoin. After rejoining, the lead briefed inadvertent IFR procedures over the UHF. At approximately 30 miles from destination, a TACAN lock-on was established. However, the flight continued to follow the coastline due to poor visibility over the water. At 20 miles, GCA was contacted and the flight was picked up on radar. The flight was cleared to 2000 feet and given a heading. At 1500 feet, the flight went IFR, and inadvertent IFR procedures were executed. Each aircraft then reestablished contact with GCA and flew individual approaches to the runway.

Needless to say, the squadron held its breath on this chain of events. Many lessons were learned by all:

- If the weather looks bad, it's even worse to fly in.
- Formation flights should be briefed as required, on the deck.
- Don't accept clearances blindly.
- It is better to be safe on the deck of a ship than to risk one's life trying to make it to land.
- IFR interface should be established between the ship and local IFR-capable alternate airfields.

Since this incident, the squadron has gained a greater respect for flight safety and the full responsibilities that a flight leader accepts. It will be a long time before the members of the squadron forget about Operation FLAILEX. ◄

UNINTENTIONAL GEAR UP

A T-28 departed Homeplate one morning on a scheduled syllabus training flight to complete a pilot checkout. The IP (instructor pilot) manned the rear cockpit, and the PUI (pilot under instruction) sat up front. The hop proceeded normally through basic airwork at altitude, followed by several practice precautionary emergency landings and some touch-and-go landings at an outlying field.

Time became a factor, so the IP took control on the way home, and an abbreviated pattern entry was made. The IP called the tower and received clearance to enter the pattern at Point Bravo – a point about 3 miles from the field. He turned the aircraft over to the PUI, and at that time both smelled strong electrical fumes. While the PUI continued into the pattern, the IP tried to contact the tower to declare an emergency and request a straight-in approach.

When the IP was unable to contact the tower, he took control and requested the PUI to try to establish communications with the tower. Meanwhile, the IP tried to troubleshoot the emergency and asked the PUI to pull the inverter circuit breakers. This didn't work too satisfactorily, so the IP secured all electrical power by placing the rear cockpit d.c. power switch to off. He entered the pattern, rocked his wings, picked up an interval behind other traffic, and broke.

As the IP rolled out of the break, he noticed that he had inadvertently dropped half flaps and was slow. He raised the flaps and accelerated to 120 KIAS. At the 180, he turned on the d.c. power for a gear check and reported to the PUI gear down, brakes OK, speed brakes up, and normal pressures and temperatures. The PUI didn't respond. At the 90, the IP saw a red light from the tower and saw the aircraft in front of him rolling out. He executed a waveoff and took it around. Again at the 180, he turned on the power, made a similar report to the PUI as the first time, and again at the 90 he saw the tower's red light.

The IP saw a clear runway, noticed the fumes were getting stronger, and decided to land despite the tower's red light. He did. The aircraft touched down on centerline, tail low, and then skidded a little over 1000 feet and came to rest 30 feet right of centerline with the gear up!

Later, the IP said when he smelled the fumes he also felt

heat and assumed he was dealing with a serious electrical fire. When they were unable to establish communications, he shut down the nonessential electrical equipment and wanted to get on the deck pronto.

On his first pass, he hoped by rocking his wings as he checked the numbers that the tower would realize he had a problem. The IP assumed the gear was down. (One could speculate that he had lowered one-half flaps when he really meant to drop the gear.) Unfortunately, *neither the IP nor the PUI checked the gear indicators while power was on.* At the 90, he saw a steady red light and did not look at the wheelswatch, who was giving him a waveoff with the paddles.

After his waveoff, the PUI noticed the gear handle in the UP position in the front cockpit and assumed the IP had raised the gear on waveoff. When the IP turned on the d.c. power on his next approach and reported gear down to the PUI, the latter saw the gear handle still up but didn't say anything. When the PUI saw paddles waving them off, he tried to tell the IP the gear was up, but made no attempt to lower the handle.

The runway wheelswatch kept giving the waveoff signal until the aircraft was on final and then switched to a roger. At no time did the wheelswatch attempt to fire a flare, even though he had them.

The IP was preoccupied with getting the aircraft on the deck, as evidenced by:

- Possibly substituting lowering flaps instead of the gear.
- Unintentionally slowing the T-28 below normal pattern speed.
- Ignoring the gear handle and position indicators.
- Ignoring the wheelswatch.

Supervisory personnel had paid little attention to the importance of the wheelswatch and had not complied with current instructions regarding the standing of the watch. The wheelswatch did not have a complete bag of proper signaling equipment at his disposal, and his training was woefully inadequate. He was sitting down, paddles in hand, arms outstretched, and virtually motionless. To top it all off, he had never fired a flare gun and was unfamiliar with its operation.

The pilot erred by fixating on getting the aircraft on the deck at the expense of the landing gear. The PUI didn't help matters a bit by just sitting there without saying anything or not lowering the gear handle in the front cockpit. The wheelswatch was not qualified to stand the watch and didn't perform his duties properly by not firing a flare. The UHF external blower motor failed, which caused the fumes. But it was human failure that turned a minor emergency into a major fiasco. ◄

Near-Midair

The incident happened just before noon on a day when visibility was all the way to the horizon. Two helicopters were returning to USS BOAT from a MedEvac to the beach. They were cruising at 500 feet in formation and were in contact with strike control. They were advised to switch to tower frequency when visual contact with the carrier was made. At 7 miles the helo flight switched to tower but were unable to get a response. They switched back to strike and were told to try tower again. The second attempt was successful, and they were cleared into the control zone.

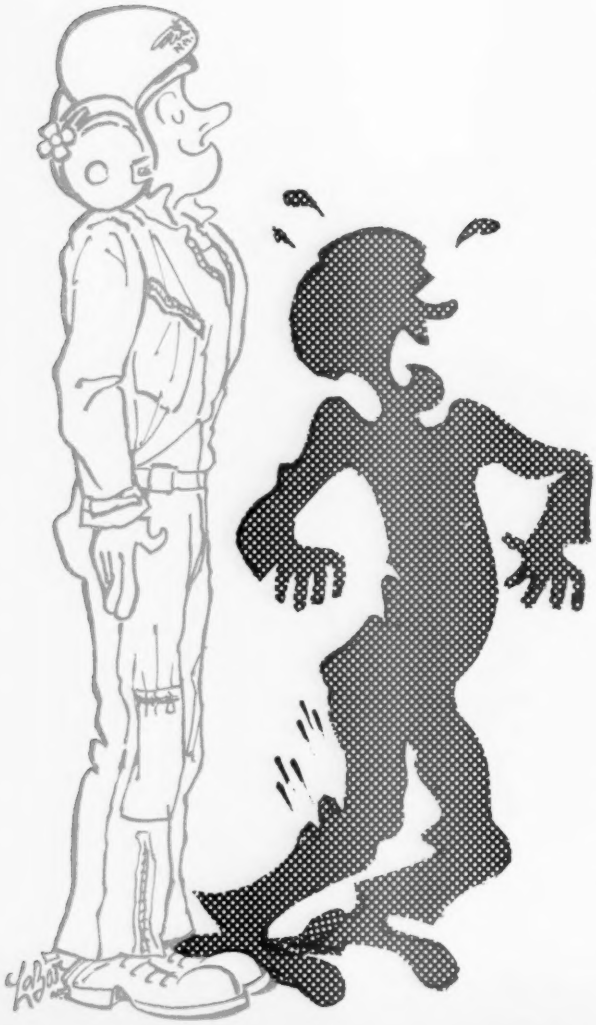
Meanwhile a P-3 was in the area on an operational ASW exercise with USS BOAT. As the helicopters began a descending turn to 150 feet, the P-3 flashed by and below the helos on a reciprocal heading. Neither of the helo pilots or the P-3 pilot made any attempt to avoid the other. The near-miss happened too quickly. The helicopter pilots estimated the P-3 passed under them with about 150 feet to spare.

The P-3 had been advised that a flight of two helicopters was inbound to USS BOAT, but the helicopter pilots were not advised that the P-3 was anywhere around. When the helicopter lead questioned the tower, "Whatthehell, over?" he was advised the P-3 wasn't under tower control. Not under his control? Within 3 miles of the ship? Just a cotton-pickin' minute.

The whole fiasco could have been prevented if the P-3 controller had talked to the tower and the tower had notified the helos; if the controller had told the P-3 that helos were inbound; if the P-3 controller had received tower's permission to bring the P-3 through the control zone; if the ship had established operating altitudes for all aircraft; or if the P-3 had been required to monitor tower frequency.

FEAR OF FLYING

By John R. Gorman, MC
Flight Surgeon
VP-1 Barbers Point, HI



OFTEN I hear "Hey, quack! What does 'fear of flying' really mean?" This is usually followed by the pilot reading something like this out of a book, "How do you differentiate between an acute anxiety reaction with fear symptoms present and a true neurotic or phobic fear of flying?" And the pilot then adds, "Can the former mild anxiety progress to the phobia?" Quite frankly, I hate to hear this question brought up by my pilots because I know I am now in for a "long-winded" discussion in order to try to clarify this subject, which will involve Freud's theory of Five (stages of personality development), Erickson's Eight (his stages center on the psychosocial development of the individual), and how early trauma, most specifically fear, in these early stages sets the stage for later problems.

Specific Avoidance Phenomenon is one type of fear of flying that may develop by forcing a scared youngster to fly up through 5 to 6 years of age; the other type of true phobic fear of flying develops as a displacement fear which arises during the Oedipal Period where the young boy is competing against his father for the mother and becomes fearful and intimidated by his huge competitor, especially if his father punishes him frequently or unreasonably or is brutal to the mother.

As the child grows, his defense mechanisms, such as repression, keep this fear from his conscious level, but this sets the stage for the later development of a counterphobic pilot. Counterphobic is defined as an attitude in which situations once feared are especially sought after! It's of interest that the counterphobic pilot is the individual who frequently races sports cars or motorcycles, takes up skydiving, or enjoys doing low-level acrobatics at airshows to prove his masculinity and fearlessness to himself and others.

Freud said the early years and stages of development were important as to what the developing individual finally became, and this certainly confirms that theory. So it's very important to protect the young child from stimuli or sources from which undue fear can develop.

The fact that a flyer has developed into a counterphobic pilot may or may not mean that he is headed for trouble. It all depends.

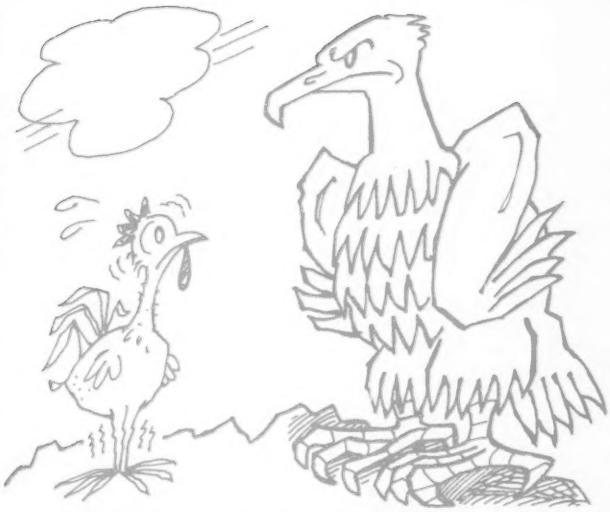
If his basic defense mechanisms of repression and denial are functioning adequately and he has no life-threatening catastrophes and no marital stress to upset the balance, then this pilot may have a long and enjoyable flying career. However, by changing the equation and shuffling him a bad deck with several spades, such as witnessing a good buddy killed, he himself almost "buying the farm" in a similar situation, some severe marital problems, working and flying long hours with chronic fatigue; then suddenly and very acutely, this pilot could develop symptoms we call fear of flying. He may even continue flying for a while with these

symptoms, but they inevitably get progressively worse. During this time he becomes a dangerous pilot because of the distractions of the various fears and symptoms he is trying unsuccessfully to cope with.

Most pilots recognize the severity of the problem and come to the flight surgeon to be grounded. However, some continue flying despite the symptoms, feeling they are a sign of cowardice. Of course, they're not, and once these symptoms develop in the pilot there is no way he can cope with them alone and without medical help. Please be advised of this. In most cases, the sooner medical help is received, the easier the condition is to treat.

In the last few years, a lot has been accomplished with behavior modification and desensitization in returning a number of these pilots to flying roles. By the same token, many of these pilots will never be returned to flying, and of this group, many do not wish to be.

While behavior modification and desensitization is a fairly new technique, it is being used extensively at Naval Aerospace Medical Institute on aviation officer candidates and pilots from the local area as well as those referred from the Fleet to us by their flight surgeons. While an ongoing study on this is in progress, we have met with a fair rate of success in returning pilots to flying. It seems that those aviation candidates or pilots this technique works best with are young, highly motivated, compulsive individuals who develop signs and symptoms of fear of flying in the early stages of the flight profile.



Some authors have reported poor results with this technique with true phobia fear of flying. But I am encouraged and feel this is probably the most valuable tool we have yet developed to treat and aid the pilot or aviation cadet with adjustment reaction fear of flying. Even a small percentage of these individuals salvaged and returned to flying is a plus! Not too long ago, all pilots with fear of flying were automatically grounded, and a few psychiatrists and flight surgeons feel this should probably still be the case.

This other side of the coin is defended on the basis that case reports often show a frequency of childhood fears more intense and protracted than usual with a later counterphobic fearlessness in teenage and adult years as a defensive mode of life. Finally, there occurs, under stresses, a reversal of this intense need to fly, into an equally strong fear of flying. Therefore, the applicant for pilot training who shows repetitive counterphobic traits should be more fully scrutinized and considered for disqualification.

The problem is these individuals are not known or recognized in the early stages, and only after the scenario described earlier occurs does it come to light what is really happening.

An interesting sidelight of the counterphobic pilot is that they are often the most daring and skilled operational pilots; some were aces in WWII, often fearless and aggressive. One such Air Force pilot was teased about flying too high in a ground support exercise. In the next flight, this officer flew so low his wings were damaged by tree branches. This same pilot (considered one of the best in his squadron) was separated from his wife overseas and rapidly developed a neurosis with depression, some free-floating anxiety, and fear of flying.

Continued

This illustrates how a seemingly stable pilot can suddenly decompensate. This is one of the reasons a flight surgeon tries to get to know all his pilots as intimately as possible, so that he can detect early changes in personality or detect flying decompensation.

Again, what actually is fear of flying? Basically and simply, it is that man has always desired to fly, but he is frustrated by the fear of falling, which is basically a fear of death. Therefore, to fly, man has to submit his safety to a machine, something of his own invention. Therein lies the problem, as the pilot must rely on a mechanical device that at any time can become defective. It is this dependency in situations of crisis that give rise to a series of problems grouped under the term "fear of flying."

Most psychiatrists agree now that the true "fear of flying" syndrome is either a neurotic phobic reaction or an adjustment reaction. However, this is not to say that other reactions, more typically neurotic or psychotic, do not occur as more complex phenomena, which include fear of flying.

Now to the question raised in the first paragraph of this discussion. It is important not to categorize fear of flying as synonymous with phobias or psychopathology. Actually, fear of flying may only be a realistic reaction, an instinct of self-preservation that is nothing more than a natural defensive reaction and does not represent pathology. The important point I wish to make here is that all of us who fly (I have 1500 hours) have experienced more than once that fearful anxiety and dread, adrenalin pumping, heart pounding, wondering what we're doing up here, and if we'll make it back down as the "cookie is crumbling around us." Fortunately, most of us have made it back to *terra firma* in one piece! This, I want to emphasize, is a normal physiological reaction and is not abnormal. Some pilots may elect not to fly again after several harrowing experiences. But this may not be abnormal, and in their cases may be showing good judgment!

It should probably be emphasized here that the thrill of flying that attracts the younger aviator to flying is replaced in the aging pilot by the satisfaction of physical and mechanical mastery and achievement. This is what constitutes a normally adjusted, mature pilot.

It should be of interest to the pilot community that the USAF School of Aerospace Medicine returned 49 percent of pilots treated with psychotherapy back to flying, as documented in a paper published in 1976 in the *Journal of Aviation, Space, and Environmental Medicine*.

This is definitely encouraging and shows the gains that are being made in this direction, where, heretofore, most pilots were simply grounded and their careers over.

So, as the man said, "Keep on truckin" – or in our vernacular – good flying!

BRAVO ZULU

By LTJG K. C. Malokofsky
VC-5

BEN Franklin said, "A penny saved is a penny earned." Well, VC-5 can be justly proud of pilots, CDR W. E. Nordeen and LT T. F. Darcy, and crewmen ADR1 R. D. Brooks, AT1 L. C. Johnson, AMS1 A. L. Gaynor, AT2 M. P. Sanchez, and AE2 C. J. Cholewinski who made multiple saves in an SH-3G amounting to $2,000,000.

After preflighting their SH-3G for a drone recovery mission, they launched and were advised a SAR mission was in progress for a man overboard. They proceeded to the SAR datum, but the rescue effort was successfully terminated and they were told to conduct the original mission. They landed aboard a ship, refueled, and launched again.

Shortly after becoming airborne, they were informed that a BQM-34 drone was inbound to the recovery area. They set course for the area and were advised the drone had flamed out and was in the chute. They were vectored to the drone's last known position.

They arrived on top an hour later and saw the drone in the water. CDR Nordeen set up a hover, and two swimmers, Brooks and Gaynor, entered the water to prepare the drone for recovery. While the swimmers prepared the drone, the pilot moved off to orbit the area. Once ready for pickup, the swimmers called the pilot back in, were hoisted aboard, and the drone was lifted clear of the water. The pilot stayed in a 50-foot hover while the water drained from the drone.

During the draining, a loud pop was heard in the No. 2 engine, with a rapid increase in N_g and T_5, followed by a decrease and split in torque. The pilot ordered the crew to prepare to ditch, the drone was jettisoned, and the helicopter settled into the water – wings level and with 5 knots forward speed to avoid hitting the drone.

After settling in the water, the pilot noted No. 2 engine was still running at 40 percent N_g. The No. 2 speed selector was retarded slightly and emergency throttle was activated. The No. 2 engine responded, the pilot launched, and they headed for the nearest point of land, about 25 miles away.

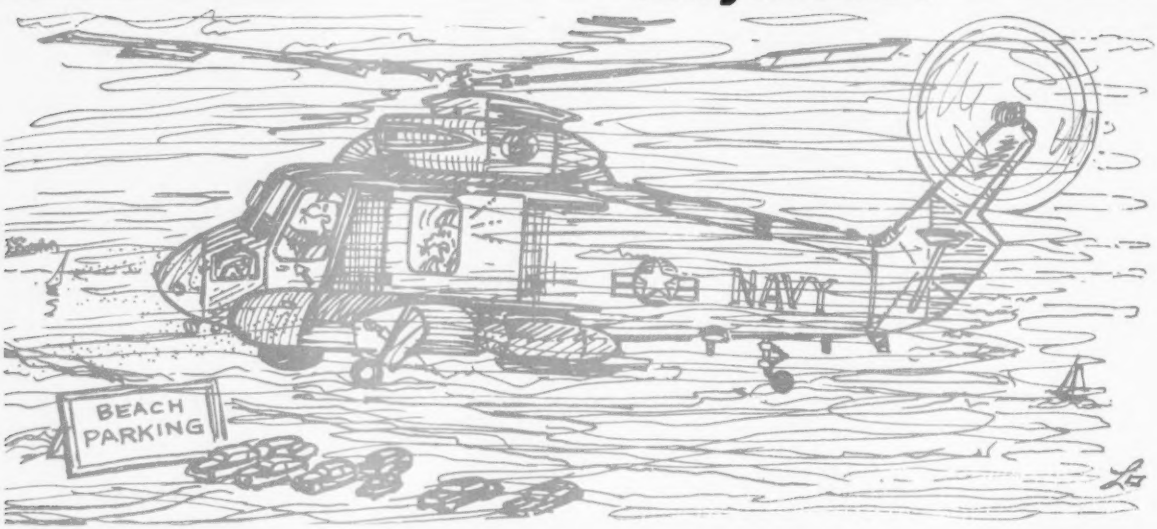
SH-3G crewmembers from left to right are AT1 L. C. Johnson, ADR1 R. D. Brooks, Commanding Officer CDR William E. Nordeen, H-3 NATOPS Officer LT Tom F. Darcy, AMS1 A. L. Gaynor, and AT2 M. P. Sanchez. AE2 C. J. Cholewinski was unavailable for photo.

While en route, a thorough check of the aircraft was made. Both external tanks were loose and askew, and the main gear indicated unsafe. The crew discussed emergency procedures for landing gear extension and the chance of a power loss on No. 2 engine.

Upon reaching a safe landing area, the gear handle was placed DOWN, but the gear did not lower. The pilot eased into a hover, over the helicopter landing pad, and activated the emergency gear extension. Nothing happened except the port mainmount partially lowered. AMS1 Gaynor was lowered by the hoist, and by withdrawing the emergency uplock release actuating pins (assisted by AMS2 Wright from the support detachment), pulled the gear down and inserted lock pins. CDR Nordeen landed safely just as the No. 2 engine began to unwind.

Bravo Zulu to all of you. Great job!

Anymouse



Say Again the Ceiling

AN SH-2F was en route from Inland AFB to Coastal AFB on a night, IFR flight plan with a rosy forecast of broken, 3-5 miles visibility, and a good dewpoint spread. About 50 miles from destination, the H-2 pilot switched to Coastal Approach who reported 5000 broken, RVR 1600. Five thousand feet sounded fine, and RVR didn't click in the pilot's non-AF heads, so they proceeded.

Seeing low scud below 2000 feet with the landing light (no ADF to play with), the HAC called FSS, told them about Coastal's reported weather and that he was over a low cloud layer. FSS just rogered, so the HAC figured the scud was isolated and passed the last good alternate – fat, dumb, and happy. The H-2 was bucking 30-knot headwinds, but there was still plenty of fuel for a visual approach, so the HAC didn't tell the pilot to speed up for max range (too hot to close the doors).

Ten miles out, Coastal Approach gave the weather again, only this time it was sky intermittently obscured and RVR 1400. The HAC remembered what RVR means, counted the pounds remaining, ordered up max range airspeed, and thought about the beach parking lots visible through occasional holes astern.

The helo continued for a TACAN approach without even a peek at destination, then waved off for a tight GCA with the low-fuel light burning bright. A new, older-sounding voice in Approach talked the H-2 into runway acquisition at 50 feet AGL. After they groped their way to Ops, the pilots discovered that Weather had reported the fog to Approach and FSS 30-45 minutes before the pilot's first chat with Approach. The trainee in Approach reported 5000 feet instead of 500 feet, and FSS just did not get the pilot's hint to check it out.

Both pilots learned that controllers are human and make mistakes and that a simple "say again ceiling" can prevent sea stories from coming true.

Laundrymouse

NATOPS Violation

FURIOUS, frustrated, and frenzied best describe how I felt when I saw the C-1 *Cod* of a big bird farm violate the wingfold procedures on the line recently.

I was standing nearby when the pilots fired up. They ignored a severe backfire on start and then rushed through their checklist. The taxi

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The purpose of Anymouse (anonymous) Reports is to help prevent or overcome dangerous situations. They are submitted by Naval and Marine Corps aviation personnel who have had hazardous or unsafe aviation experiences. These reports need not be signed. Self-mailing forms for writing Anymouse Reports are available in readyrooms and line shacks. All reports are considered for appropriate action.

REPORT AN INCIDENT
PREVENT AN ACCIDENT

director signaled the pilots to leave the chocks with their wings folded. After leaving the chocks, the pilots didn't check brakes but began taxiing and spreading the wings at the same time.

This was a frightening sight to any S-2/C-1 pilot who has seen a wing fall off from a stuck pin. There he went, shaking the wings at the joints as it bounced along. One or two of the ground crew actually chased the *Cod* down the ramp. Were they trying to see the wings spread? Or were they wishing the pilots good luck?

Considering that the C-1 has served faithfully for 20 years, it should be treated with respect, and NATOPS procedures should be followed. I wish those two would either operate by the book or turn over the aircraft to those who will.

Dutchmouse

What Kind of a Flight?

OUR squadron had a scheduled morning and afternoon local tanker mission. The aircraft scheduled for the missions flew the morning flight but was diverted for a passenger run in the afternoon. That left only one possible aircraft for the afternoon tanker mission – an aircraft which had been down for maintenance for a valve housing change on the No. 2 prop. This required a postmaintenance checkflight.

I'm a flight engineer assigned as a troubleshooter, and I happened to be the flight engineer assigned for the afternoon tanker mission. The MCO (maintenance control officer) told me to fly the tanker mission and then perform the checkflight. I told the MCO I couldn't buy that. I'd heard of test-and-go but never go-and-test. The AMO (aircraft maintenance officer) entered the discussion and said it would be go-and-test.

I pointed out that what we were about to do was against 4790.2A, but I was informed it would look bad if

the squadron busted the mission. We went, and it was a go-and-test. I could have refused to fly, and no doubt all hell would have broken loose. What's next? Who knows? Obviously we have to find a way to make everyone involved with aircraft follow the rules and procedures, but how do we do that?

Corneredmouse

Pretty Not Practical

WHILE attached to a helicopter squadron aboard a carrier, we were directed to maintain white MK-1 flight deck vests for use as personal survival gear for the admiral and staff when embarked in our aircraft. A quick check of NAVAIR 13-1-6.1 indicates that the only authorized life preserver for passengers in helos on overwater flights is the LPP-1/1A. I also observed crewmen of a VIP helo from another ship wearing blue flight deck vests instead of their SV-2 and LPA-2.

Our riggers don't claim to have any responsibility for the care and maintenance of the MK-1 because it's not authorized survival gear for use in aircraft, and it's not even covered in our publications. People have died in helicopters after water entry in ditching situations because they were unable to properly egress. Wearing the MK-1 vice the LPP-1/1A does make egress more difficult and might decrease chances of survival.

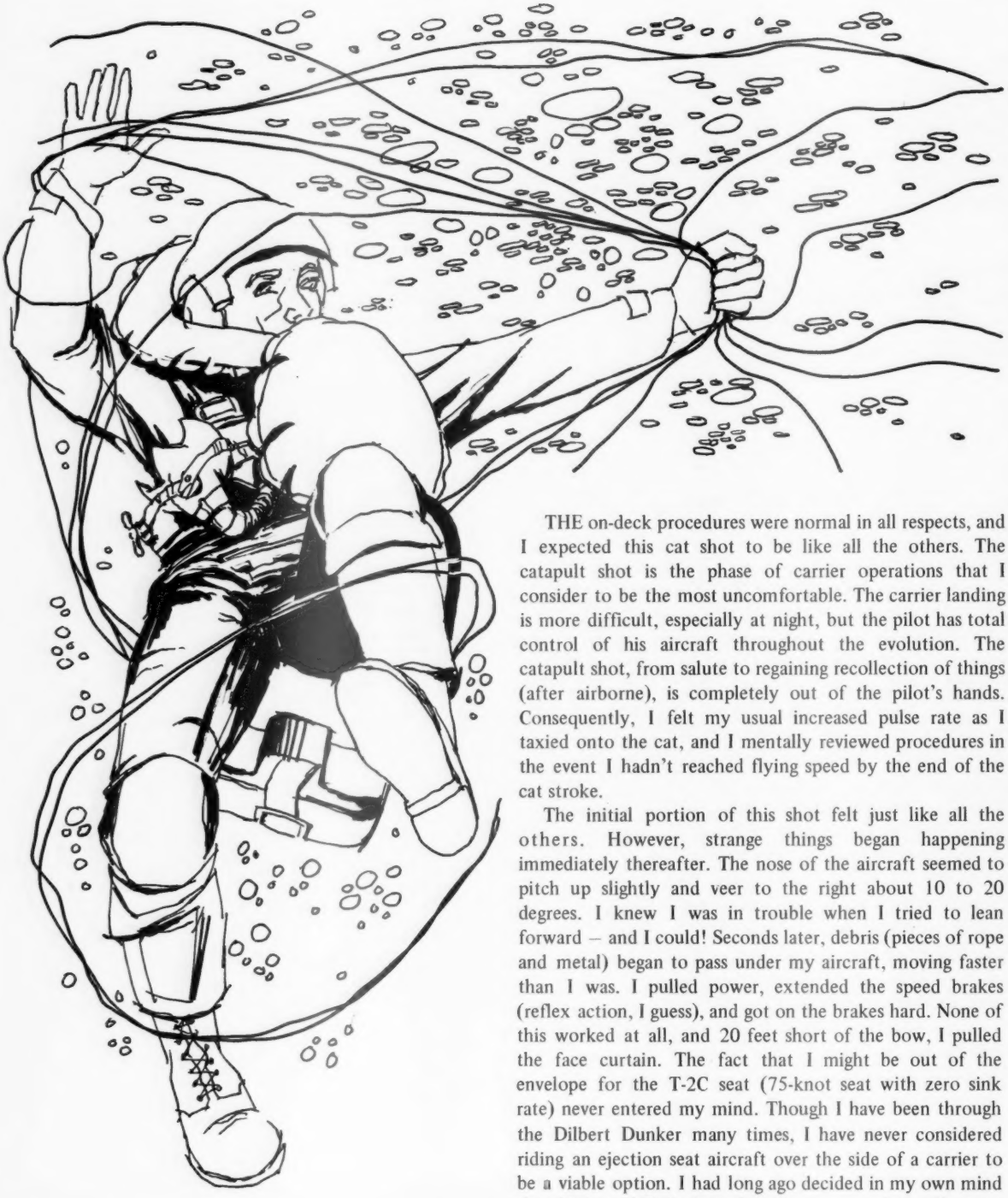
Vippedoffmouse

The only thing we can point out is that the NAVAIR 13-1-6.1 specifically states that the LPP-1/1A is the preserver to be used by passengers in naval aircraft. The MK-1 is designed for working parties on deck. Any use in aviation (in aircraft) would have to be authorized by a cognizant authority (i.e., NAVAIRSYSCOM, NAVSEA).

Where Are the Rafts?

AT the present time in our squadron, there are many aircraft flying without liferafts. Considering the location of the airfield, almost completely surrounded by water, takeoffs and landings must be over water because of the wind conditions we have here. The supply system appears to be out of rafts and is slow to acquire new ones. Rather than lose flight hours, we disregard the safety needs of the crew and pilots. It's an everyday occurrence. The aircraft need to be grounded and/or pressure placed on the supply system to provide the needed equipment.

Concernedmouse



THE on-deck procedures were normal in all respects, and I expected this cat shot to be like all the others. The catapult shot is the phase of carrier operations that I consider to be the most uncomfortable. The carrier landing is more difficult, especially at night, but the pilot has total control of his aircraft throughout the evolution. The catapult shot, from salute to regaining recollection of things (after airborne), is completely out of the pilot's hands. Consequently, I felt my usual increased pulse rate as I taxied onto the cat, and I mentally reviewed procedures in the event I hadn't reached flying speed by the end of the cat stroke.

The initial portion of this shot felt just like all the others. However, strange things began happening immediately thereafter. The nose of the aircraft seemed to pitch up slightly and veer to the right about 10 to 20 degrees. I knew I was in trouble when I tried to lean forward – and I could! Seconds later, debris (pieces of rope and metal) began to pass under my aircraft, moving faster than I was. I pulled power, extended the speed brakes (reflex action, I guess), and got on the brakes hard. None of this worked at all, and 20 feet short of the bow, I pulled the face curtain. The fact that I might be out of the envelope for the T-2C seat (75-knot seat with zero sink rate) never entered my mind. Though I have been through the Dilbert Dunker many times, I have never considered riding an ejection seat aircraft over the side of a carrier to be a viable option. I had long ago decided in my own mind that 50 feet of flight deck altitude was enough to offset any airspeed shortage.

An aircraft or catapult malfunction during a cat shot is one of the most dangerous situations a naval aviator can face. It requires instantaneous recognition of a malfunction, analysis of that problem, and execution of the correct action – all in a time span of 2 to 3 seconds. LCDR J. A. Douglass, going through instructor refresher CARQUALs with VT-9, encountered such a situation recently and was equal to the challenge. He ejected successfully from his T-2C on the cat stroke – but it was close. Here is his account of, as he expressed it . . .

"A REAL HAIRY SITUATION"

By LCDR J. A. Douglass
VT-9

These conclusions, however, were derived from 10 years of flying 0-0 seat aircraft. When my T-2 obviously was not going to stop on the deck, I just did make it. Had I pulled the face curtain a second earlier, I probably would have landed on the flight deck (full chute deployment was achieved *below* flight deck level). A second later and the nose of the aircraft would have pitched far enough down over the bow to put me out of the envelope.

Having ejected twice before enabled me to follow the sequence fairly well. I remember tumbling away from the seat and the jolt of the chute opening. My normal (?) routine – after a sigh of relief when the chute blossoms – is to deploy my raft. This gives me an indication of when I'm 20 feet above the water and I can release my koch fittings. I don't wear gloves during carrier launches since they proved a hindrance on my previous ejections. (This practice is authorized by OPNAVINST 3710.7H, Chapter 7, para 701.–Ed.) Then I remove my mask and inflate my LPA. This time, however, I was unable to do any of the above. The chute opened, and I hit the water immediately.

I came up, ripped off my mask, and saw the biggest, grayest, closest ship I had ever seen in my life – heading right at me! If any of you want to know exactly how it feels to be scared spitless, come see me . . . I can tell you.

I started trying to swim clear, fear of being run over or getting tangled in my shroudlines rising in my mind. A nifty piece of seamanship by the boat driver eliminated the first worry, but entanglement soon became a reality. I had recently lost a good friend to chute entanglement. He had panicked – and drowned. I forced myself to stay calm, even though the carrier was churning by close enough to touch, and I was swallowing a good bit of seawater.

I finally realized that I still hadn't inflated my LPA. I pulled the toggles, but only one side inflated. Still, it was enough to improve my situation greatly. There was a flotation device that someone on the flight deck had tossed over (marker float), and for a moment I was tempted to swim to it. But again, I was afraid of further entanglement.

As the ship passed and the water calmed down, I saw that I was indeed all tangled up. My panic level began to rise, and I reached for my shroud cutter. Then I remembered my friend – and fought the panic down. I was floating, my chute was floating, and help was close at hand. I just remained still and tried not to disturb things.

Sure enough, about a minute later the helo was overhead and the swimmer was in the water. The swimmer spent a good 10 minutes manually untangling me from the shrouds. He also noted my LPA was only half inflated, so he gave the toggle another yank. It inflated completely. I don't know whether I had pulled it hard enough or was so entangled that it couldn't actuate.

When all the lines were clear, I was still attached to the chute/seat pan by my mask, which was routed through a loop on my survival vest. The swimmer couldn't locate the quick disconnect fitting on my mask, so he used my survival knife to cut the hose. Shortly thereafter we were hoisted into the helo and returned to the flight deck. I arrived with a gut full of seawater but no injuries. I had been in the water 18 minutes. Somehow it seemed longer.

Lessons learned? 1) When I go to a new aircraft, I'd better update my habit patterns to match that aircraft's capabilities; 2) Don't give up on the LPA if the first pull doesn't work; 3) Parachutes don't sink like rocks – don't panic if tangled up; 4) My mask is no longer attached to my body. The idea of perishing from the way I had structured my "survival" gear is just a bit too ironic; 5) Pay attention during your water survival training. The information and training they give is invaluable in an actual situation.

In this day of 20-20 hindsight on the part of aircraft mishap boards, a pilot has even more pressure to make only the right decisions. I made the right decision and survived a real hairy situation. But I survived either "in spite of" or "because of" what I did – you decide. The main point is, we all need to periodically reevaluate our procedures. Hopefully this tale will encourage the reader to do so. ◄

Tradeoff or Ripoff?

By CDR L. B. Wardlow
CO VS-24

WE recently returned from an extended deployment, and I was surprised when the safety officer approached me with a suggested 1-day safety review. My initial reaction varied from "Are we overplaying safety?" to "Is it a little early in the game to start thinking about safety training?"

I thought about the events relating to safety during the course of the cruise and felt a certain degree of pride and satisfaction in the accomplishments achieved. The primary goal which was promulgated early in the deployment was that every individual who started the cruise with the squadron would return home (administrative transfers excepted) in the same basic physical condition; i.e., all limbs and digits attached to the proper place. Blessed with a rather inordinate amount of talent and experience as a result of the transition schedule associated with our new weapons system, the S-3 *Viking*, an aggressive and effective safety program (or was it a lot of luck?) allowed the squadron to achieve this goal.

In addition to several operational records established, we surpassed 55,000 total accident-free hours, encompassing almost a 13-year span without compromising safety. Our experienced aircrews, maintenance/safety CPOs, and senior petty officers steadfastly refused to allow safety to be "ripped off" under the smokescreen of operational necessity.

Although anticipating the trauma associated with massive personnel transfers (experienced by aviation communities involved with the introduction of a new aircraft), the full impact did not strike home until the end of the cruise and the first few weeks of postdeployment standdown. It appeared that the doors to the squadron opened only in one direction – OUT. The trained and qualified people that performed so admirably over the past 3 years rapidly departed for well-earned tours of shore duty. With their departure also goes that intangible safety consciousness that only experience can develop. That almost magic tradeoff so readily apparent in the talented work center supervisor and/or flight deck troubleshooter, who has spent time in the CV flight deck environment, is not a commodity which can be drawn from supply.

Faced then with a challenging retraining period at all levels in the squadron, the answers to my reactive questions concerning the proposed safety review are patently obvious. The complexity of our weapons system, the demands and rigors of carrier operations, and the level of experience of the replacement personnel not only suggests, but demands, that safety awareness be identified immediately as *the priority* in our rebuilding process. The ripoff syndrome must be recognized for what it is – an expedient that is totally unacceptable in the peacetime training atmosphere. Workable tradeoffs can and must be developed to accommodate the operational and maintenance necessities required of a deployable squadron. Is it too early to start? No! If we haven't started, we may already be too late.

Is experience the key?

By Dr. Michael S. Borowsky
and Ms. Gloria B. Barrett
NAVSAFECEN Statistics & Mathematics Dept.

WE receive many inquiries concerning relationships between a pilot's flying experience and his accident potential. In response, a comprehensive study of pilot-factor accident rates with respect to various experience factors was performed to determine whether flight experience is related to safety and, if so, which pilots have the greatest accident potential.

The first phase of the study considered relationships between accident rate and total pilot flight time. *The statistical tests confirm original "gut feelings" that pilot accident potential decreases as total pilot flight experience increases.* Specifically, it was found that the pilot factor accident rate for designated naval aviators with greater than 1000 flight hours in all models is lower than that for the less experienced aviators even when experience in type is very limited. Command attention may of course play a role in this. Accident potential is very high, on the other hand, for new aviators with under 1000 flight hours in all models (i.e., RAG and first tour pilots). These pilots lack both general aviation experience (total flight time) and experience in type, and, unlike the transitioning pilot, must learn general airmanship and specific model handling qualities simultaneously.

The above general conclusions are based on examination of the A-6, A-7, F-4 communities, and combined All-Navy activity. (Detailed data and statistical tests are on file at NAVSAFECEN.) Specific relationships between pilot experience and aviation safety are as follows:

A-7. There exist relationships between pilot factor accident potential and flying experience. Pilots having less than 1000 hours first pilot time in all models have higher accident potential than the more experienced pilots. Total (all model) flying experience is a critical factor in flight safety for pilots with less than 150 flight hours in the A-7. Accident potential is higher if total flying experience is limited (less than 750 first pilot hours) than if total flight hours are high (greater than 1000 hours first pilot). These two groups probably represent the new aviator assigned directly to an A-7 squadron and an experienced aviator who transitions into the A-7.

Though a complete analysis of the A-7E community apart from the total A-7 community cannot be performed because of limitations with historical flight data, an examination of pilot error accidents in the A-7E indicates that the results discussed above are applicable.

A-6. A relationship exists between pilot factor accident potential and total flying experience. Pilots with less than 1000 hours in all models demonstrated a higher accident rate (.78) during CY-74/77 than the more experienced pilots (.47).

F-4. Again, pilots having at least 1000 hours first pilot experience in all models possess lower accident potential than the less experienced pilots. Furthermore, pilots flying in the initial portion of their first F-4 tour (150-400 flight hours in F-4) have high accident potential regardless of all model experience.

Continued

All Navy. Though the combining of aircraft models having different characteristics (e.g., number of seats) presents interpretation difficulties, relationships exist between pilot factor accidents and first pilot experience.

The accident potential of pilots in approximately their first 200 hours after training command (225-450 total hours – all models) is higher than that of the more experienced pilots.

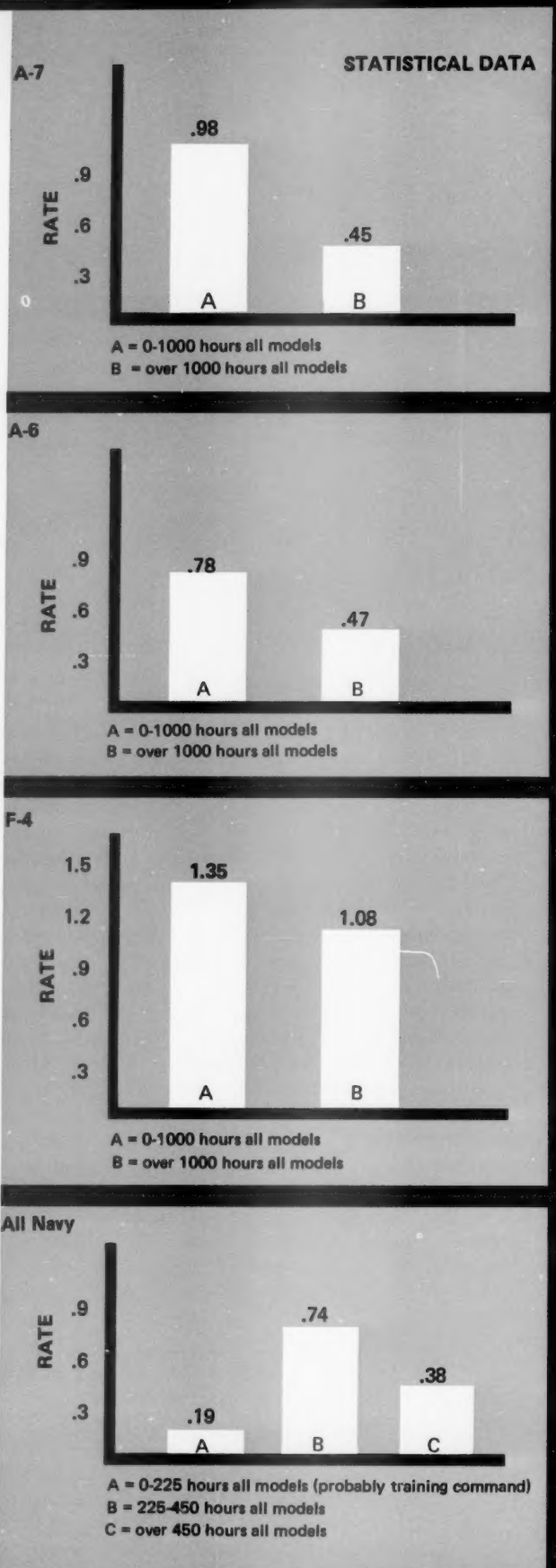
Though pilots with limited experience (less than 150 hours) in model have high accident potential if their all-model experience is limited (between 225 and 450 hours – e.g., new pilots recently out of training command), their accident potential is lower if all model experience is more extensive (e.g., transition pilots). Therefore, lack of experience in model is *not* in itself critical to flight safety.

Data Sources. To obtain the pilot factor accident rates used in this study, the flying records of all Navy pilots, whether or not involved in accidents, were considered.

Extensive programming and validation procedures were employed to obtain the required exposure data from the IFARS (Individual Flight Activity Reporting System) data bank. Every Navy pilot who submitted an IFAR Survey Report or began flying subsequent to 30 June 1974 was included in the analysis. Each pilot was categorized after each of his flights according to total hours all models and hours in model. The exposure (length of flight) was then associated with the proper category and summed to obtain total flight hours for each category.

These exposure data were related to accident records from the Naval Safety Center Aviation Mishap File to compute rates for analysis. The expression "number of accidents" in this study denotes the number of pilots who, while in control of the aircraft, had a major or minor accident for which a pilot-related error on his part is determined to be a contributing cause. IFARS records were used to categorize each such pilot according to total flight time at the time of the mishap. Where possible, the IFARS data and pilot data from the mishap reports were compared, with excellent agreement. The relationships between flight safety and pilot experience considering *first plus second pilot time* were also examined with results analogous to those presented above.

No attempt was made to quantify the effects of certain uncontrolled variables. Therefore, absence of specific statistical relationships may be the result of command attention such as increased safety emphasis by commanders during periods of high tempo of operations and special scheduling for pilots with minimal experience in model. Though the trends are consistent across the aircraft considered, no intermodel comparisons were intended since qualitative factors such as mission profiles and handling characteristics were not analyzed. ◄



CY 1974 - CY 1977

KEY: Each block gives number of pilot factor accidents and rate for the category (e.g., A-7 pilots having between 0 and 450 total hours all models and between 0 and 150 hours in model have 8 accidents and a rate of 1.88). The symbol + may be interpreted as "greater than" (e.g., 2250+ denotes greater than 2250 flight hours).

A-7 Hours — **Total Flight Hours All Models (First Pilot Time)**

	0-450	450-750	750-1000	1000-1500	1500-2250	2250+	Total
0-150	8 1.88	4 2.32	0 .00	0 .00	2 1.78	0 .00	14 1.41
150-400	4 2.69	5 .77	0 .00	2 .80	2 1.07	1 .56	14 .84
400-750		0 .00	5 .76	2 .36	1 .32	1 .33	9 .43
750-1100				2 .48	1 .29	1 .26	4 .35
1100+				0 .00	3 .48	3 .41	6 .42
Total	12 2.09	9 .82	5 .50	6 .44	9 .57	6 .35	47 .64

A-6 Hours

	0-450	450-750	750-1000	1000-1500	1500-2250	2250+	Total
0-150	2 .84	0 .00	0 .00	0 .00	0 .00	1 1.38	3 .52
150-400	0 .00	4 1.33	1 .71	2 1.48	0 .00	0 .00	7 .83
400-750		0 .00	2 1.12	1 .38	1 .59	1 1.19	5 .64
750-1100				2 1.22	0 .00	0 .00	2 .47
1100+				0 .00	0 .00	2 .52	2 .31
Total	2 .64	4 .84	3 .82	5 .74	1 .15	4 .51	19 .58

F-4 Hours

	0-450	450-750	750-1000	1000-1500	1500-2250	2250+	Total
0-150	1 .60	1 .86	0 .00	0 .00	1 1.25	0 .00	3 .53
150-400	3 3.67	6 1.94	4 3.15	3 2.09	0 .00	2 3.35	18 2.20
400-750		0 .00	2 .78	1 .57	3 2.88	2 5.17	8 1.11
750-1100				0 .00	3 1.87	1 .88	4 .86
1100+				1 3.95	2 .53	3 .92	6 .82
Total	4 1.61	7 1.23	6 1.37	5 .84	9 1.09	8 1.28	39 1.19

In Model Hours

	0-225	225-450	450-750	750-1000	1000-1500	1500-2250	2250+	Total
0-150	17 .19	33 .73	8 .31	2 .11	10 .41	12 .54	3 .16	85 .35
150-400		25 .74	23 .39	12 .48	15 .45	7 .35	7 .46	89 .47
400-750			5 .19	16 .45	12 .42	12 .59	8 .61	53 .42
750-1100				0 .00	7 .27	7 .46	7 .51	21 .37
1100+					2 .42	7 .29	10 .37	19 .34
Total	17 .19	58 .74	36 .32	30 .37	46 .40	45 .44	35 .40	267 .40

Two engines out

THE C-130 crew was scheduled for a long, overwater mission and carefully preflighted the aircraft before departure. They taxied out, smartly read back their clearance, and departed on time. They climbed to FL250, completed all checklists, and settled down for what they expected would be a routine flight.

Before too long, the routine flight turned into something else. The first sign that all was not well was an apparent No. 2 generator failure. Prior to the problem, all gages were sweet. Initial flight station indications, after the generator dropped off the line, were fluctuations of all engine performance gages, automatic disengagement of the autopilot, illumination of both hydraulic boost pump warning lights, and the fuel boost pump lights.

The aircraft commander and copilot discussed the problem and disconnected the autopilot. Then they watched to see if the No. 1 generator would assume the load. It did. Meanwhile, the No. 2 generator was checked for indications of frequency, voltage, and load. All were zero. RESET was attempted without success. So the No. 2 engine was shut down with the engine condition lever, as specified by NATOPS.

No sooner had they completed the necessary steps to operate off the No. 1 generator when it became sick. The same procedures were accomplished on it as on the No. 2 generator – also without success. The pilots increased power on the starboard engines to maximum continuous power and all nonessential electrical loads were secured. The aircraft commander contacted ATC and declared an emergency, while making a 180 to return to base.

Airspeed was reduced to 160 knots and to maintain this speed a gradual descent was begun. Center came through with a clearance and granted an en route descent. Fuel was jettisoned to lighten their weight.

A check of weather conditions back at base and at a divert field revealed that it would be better to divert because of more favorable winds and a longer runway. Center confirmed an almost direct route to the divert field and advised the field had some runway construction and equipment on the field, but that the runway could be cleared at pilot's request. It was requested.

Plenty of time remained to carefully consider the approach and landing, a second fuel jettisoning, engine-out landing procedures, etc. The pilots and flight engineer agreed that a restart on the No. 1 engine and another try to

get the No. 1 generator on the line was worth the attempt. Generator control panels were prepared for a quick swap as soon as the No. 1 engine was turning and on speed. Manual reset was tripped, and after all options were unsuccessful, the No. 1 engine was shut down again.

The aircraft commander advised the crew they were committed to a two-engine-out landing. A radar surveillance approach was commenced, and the pilot again requested the runway be cleared of obstructions. A cockpit briefing ensued. The crew discussed loss of normal brakes, nosegear steering, the use and procedures for obtaining auxiliary brake pressure, fading brake action, and probable blown tires.

The approach was continued, and the OK for a long straight-in was granted. The gear was cranked down manually and airspeed was maintained at 160 knots. On final, the speed was reduced to 150, and flaps were set. After landing was assured, the pilot slowed gradually to 120 knots for touchdown. The aircraft landed smoothly 3000 feet from the approach end on the 10,500-foot runway.

The pilot lowered the nose to the runway to avoid swerving, and No. 4 engine was feathered. Rollout was on centerline. Number 3 engine was left in ground idle. Emergency brakes were selected, but shortly the brakes began fading and the pilot applied full brake pressure.

At the 8000-foot marker, while still rolling at 15 knots, the C-130 plowed through some wooden construction barriers – which had not been removed. Number 3 engine was secured before contact to prevent damage to the prop. The aircraft came to a stop about three plane lengths beyond the sawhorses. The C-130 was secured, and all onboard departed through the crew entrance door. There was little damage to the aircraft and no injuries to personnel.

The crash crew which had followed the C-130 down the runway shot foam in the right main gear. It was smoking profusely from blown tires, but there was no visible fire.

Later, investigation revealed both generators had failed bearings. The shafts were almost frozen. One interesting point came to light concerning pilot fatigue, because so much right rudder pressure was required to maintain balanced flight. The way this crew relieved some pilot leg pressure was to have the navigator assist the pilots by lying down beside the copilot's seat and put both his feet on the right rudder pedal. Directional control was easy to maintain, after retarding throttles to flight idle, because this allows full right rudder trim to be neutralized.

The crew is to be commended for their successful handling of the emergency. Major damage to the aircraft and personnel injuries were avoided by the professional way in which all performed. The skin damage to the C-130 would have been avoided if the barriers had been removed.

It was a day like many others. The scheduled flight was like many others. But before the day had ended, not so common events would end in . . .

A fatal decision

THE schedule called for a two-plane section of F-4s to run intercepts and then return home. Call signs Skip 21 and Skip 22 were assigned. They would be able to complete the hop and be back before the afternoon was over.

The crews briefed and went to sign for the aircraft. When the crew of Skip 22 reviewed the yellow sheets, they noted and discussed a previous discrepancy concerning drag chute streamers. The preflight was routine except for a personnel parachute pack gripe which was corrected and a hydraulic leak which was checked and serviced before and after engine start.

After takeoff, the flight proceeded to the area to conduct their intercepts. Three intercepts were performed before the *Phantoms* joined up for the return to Base.

VFR field entries and the break were normal, with Skip 22 breaking first. After dropping the gear and flaps, Skip 22 incurred a trailing edge barber pole indication. Slight right aileron was required to maintain wings level.

Checklists were completed and aircraft's performance was determined to be satisfactory. The approach was continued maintaining 17 units angle-of-attack as a precaution.

Skip 22 touched down, but the drag chute streamed and the pilot took a waveoff:

1533
Tower: You have a streamer.
Skip 22: Roger. We're going around. Winds?
Tower: Winds are 200 at 8.
1534
Skip 22: What gear is in battery if we need it?
Tower: One abort gear, 6900 feet from the approach end.
Skip 22: Any shortfield gear today?
1535
Tower: Understand you want the shortfield gear?
Skip 22: We may.
Skip 21: It's the one before the water gear.
Skip 22: OK.
Tower: Shortfield is available.
Skip 22: OK. We'll take it if it's ready.
Tower: Check wheels down, hook down. Winds 200 at 10.
1536
Skip 22: Gear down, hook down.
Tower: Do you have fuel for another pass?
Skip 22: Affirmative, but we'd like to get it this time. We'll have to divert after one more.
Tower: Both gears have slipped off the risers. You can go ahead and try it this time.
Skip 22: OK.
1537
Tower: Hook skip, one and two.
Skip 22: We're staying on the ground.

The pilot decided to stay on the ground after experiencing control problems on final. They had been severe enough to prompt the RIO to ask if they should eject.

The pilot attempted to brake the aircraft and knew he still had the abort gear ahead of him. Suddenly, one main tire blew followed by severe airframe vibrations, and then, the separation of the other main from the aircraft. The pilot struggled to maintain directional control as the nose veered to the right and the F-4 began a 40-degree drift.

Now out of directional control, the aircraft continued at

80-90 knots toward the runway edge, still 1000 feet from the abort gear.

As the F-4 headed toward a barricade off the runway, the pilot shouted, "Get out!"

"No!" responded the RIO.

"We're getting out!" the pilot hollered and initiated ejection as the aircraft departed the runway.

Both seats fired. The pilot's chute blossomed, giving him one swing before he impacted the ground. He hit hard, but received only minor injuries. The RIO, however, was not so fortunate. For some reason, he was *not strapped in when the seat fired.* He received fatal injuries as a result.

There were four possible reasons why he wasn't hooked up:

- He was not connected before the aircraft taxied out.
- He released his fittings during flight.
- The fittings failed during ejection.
- He released his fittings after landing preparatory to a quick egress from the aircraft.

The RIO was reported to have been hooked up when the F-4 taxied out for the flight. In addition, the RIO was considered to be extremely concerned with safety precautions and not likely to either leave the line area unstrapped or to disconnect his chute in flight. Thirdly, inspection and subsequent testing of the shoulder harness parachute fittings revealed no defects. Thus, the likely reason is that the RIO unstrapped himself in anticipation of a manual egress from the aircraft.

The decision by the pilot was considered prudent given the circumstances and lacking definite guidance from NATOPS. The *Phantom* was uncontrollable and heading for an obstruction. Though the aircraft did ultimately avoid the barrier, such an occurrence seemed unlikely at the time.

The fatal decision of the RIO to unstrap before a choice of alternatives had been made, and then not to communicate to the pilot that he had unstrapped resulted in this avoidable tragedy. The concept of the RIO and pilot operating as a team broke down. Working together, both would probably have survived. Acting separately, one died.

Airfield Profile No. 6:

NAS Miramar

"Fightertown, USA"

By LT David B. Palmer, USN

WELCOME to sunny Southern California and Fightertown, USA. I say sunny with reservation because last winter set a new record at Naval Air Station Miramar. We received over 20 inches of rainfall against a normal yearly average of 9.4 inches.

The airfield at "Fightertown USA" is named Mitscher Field in honor of ADM Marc Andrew Mitscher who engineered devastating attacks against the Japanese forces in the Pacific during World War II.

Located approximately 15 miles north of downtown San Diego, California, NAS Miramar is surrounded by people, houses, and civilian airfields. Good access is provided to all of the local area by the surrounding network of freeways and highways.

Naval Air Station Miramar is home for Pacific Fleet fighter, early warning, and reconnaissance squadrons plus numerous tenant activities. We host home-based and visiting aircraft of virtually all types ranging in size from the C-5A *Galaxy* to light, private aircraft. It's a busy airport, conducting approximately 300,000 operations per year.

As a visitor to NAS Miramar, you will be arriving between the hours of 0800 and 2400 local, which are the present field operating hours. A heads-up attitude is advisable. The airspace surrounding the field is shared extensively with heavy civilian aviation traffic. Keep a sharp eye out on final even if you are in VMC.

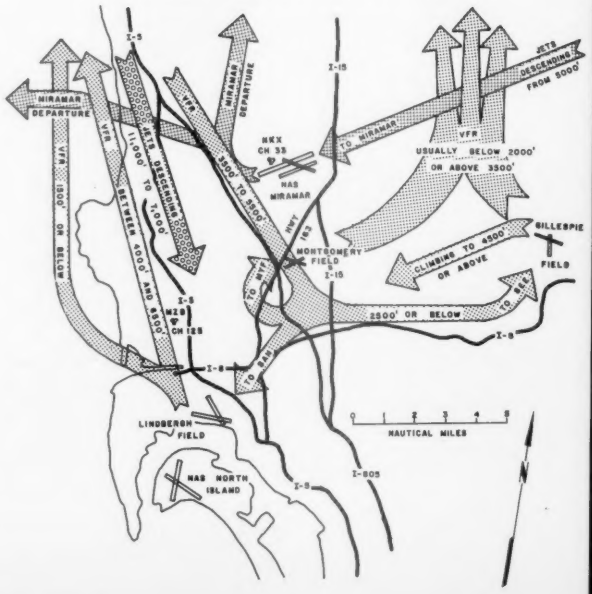
San Diego Approach Control provides vectors to the final approach course or for VFR entries. The speed limit is 250 knots below 10,000 feet MSL until within 5 nm, then accelerate to 325 knots to the break. Since noise is a problem, add power prudently. The break altitude is 2000 feet MSL for entry, descending to 1600 feet MSL downwind for a left-hand pattern.

In addition to and operated simultaneously with the 1600-foot pattern for Runway 24 is the 1100-foot MSL low pattern. This pattern is used for aircraft desiring multiple touch-and-go or FCLP (Field Carrier Land Practice) operations and is used for Runway 24 left only. This runway is also used for full stops if the traffic load is heavy. Do NOT exceed the airfield boundaries, which are Interstate 805 to the west and the water tower located 2.3 miles south southeast.

Continued

SAN DIEGO AREA

VFR AIR TRAFFIC PATTERNS



View of the approach to runway 24.

Runway 6 is seldom used but the pattern is essentially the same; left traffic break altitude 2000 feet, descending to 1000 feet downwind. Again, do not exceed the airfield boundaries which are Interstate 805 to the west and Mira Mesa which is the heavily populated area to the north of the field.

Upon arrival at the field, you may encounter the delta or holding pattern at 2500 feet MSL. It is used for short periods of time if runways are fouled or if traffic volume becomes excessive.

Some of the flight services available are hot refueling for most tactical aircraft and transient service for such needs as parking, inspections, oxygen, etc. Follow-me service is provided automatically for our larger visitors and is available on request to anyone. Transient maintenance is not always available during weekends or at night. Limited maintenance is available at other times. The Automatic Carrier Landing System is in operation for all mode approaches. Flight Planning is located in the Operations building with the usual NOTAMs, charts, etc., and the Naval Weather Environmental Service Detachment is directly across the hall for weather briefings.

NAS Miramar's Flight Data Entry and Printout equipment gives us direct and rapid communication with the Los Angeles Air Route Traffic Control Center computer. Depending on workload at the time, flight plans can be processed and clearances delivered within minutes. Even last-minute changes can be handled without difficulty. Hopefully, delays have been virtually eliminated.

For service to flightcrewmen, a snack bar is located at Operations which serves a variety of goodies including tacos, burritos, and burgers. "El Gato" is open 0630 to 2200 weekdays and 0730 to 1900 weekends and holidays. More elegant dining is available at the Officers' Club which is located across the street from the BOQ. The bar is closed on Mondays.

A limited amount of lodging is available at the BOQ; reservations are recommended (Autovon 959-3400). Otherwise your best bet is one of the local motels. One motel is located approximately 4 miles south, and there are numerous others a few miles nearer the heart of San Diego.

For transportation, the Navy Exchange operates a car rental service; a hotline and key drop are provided at the Operations Duty Desk. City busses (express to downtown San Diego) stop at the front gate every 30 minutes on weekdays and every hour on weekends. Transportation to the BOQ can be obtained by calling base taxi.

And what would an air station be without special considerations? Naturally, the problem of noise abatement is at the top of the list. NAS Miramar is virtually surrounded by housing developments, many of which are within 2 miles in all directions of the field.

Compliance with the procedures outlined in FLIP planning is not only mandatory and critical but also greatly appreciated by all parties on both sides of the fence. The downwind pattern limit to Runway 24 is a large cylindrical orange and white water tank 2.3 miles south southeast. This tank is also the northern boundary of Montgomery Field 3.8 miles to the south. DO NOT BREAK THIS BOUNDARY!

A briefing by the Duty Officer on departure noise abatement procedures is required prior to departure. If *you* blow it, *they* know it, and *we* hear about it. Remember, right turn after passing the TACAN to either the westerly or northern departures. Do not exceed a 30-degree bank angle on the northern departure or you will overfly the densely populated area of Mira Mesa.

If it should rain, expect standing water to several inches in depth at some places on the field primarily at the intersection with the crossing runway. Even after the rain stops, the puddles can linger for hours and even days.

Last but certainly not least is the civil aviation population. NAS Miramar is surrounded by no less than six civilian airports within 20 miles. The population of light, private aircraft is overwhelming. Over one and one-half million commercial/general aviation aircraft fly the north/south airways on the western boundary of the field yearly. They are seemingly invisible and are likely to be anywhere.

NAS Miramar shares one-half of the southern portion of its 5-mile traffic area with Montgomery Field 3.9 miles to the south. Montgomery Field, even busier than NAS Miramar, is the fifteenth busiest general aviation field in the nation with over 370,000 operations in 1977. Give them half, and we are left with less than 2 miles for our downwind pattern. Heads up! This pattern limit is defined by the large water tank on the east side of Highway 163 mentioned earlier.

When you file for your return home, we hope you will have had a safe and enjoyable visit. Please heed the warnings and have a safe trip home. Any comments you have will be appreciated; please annotate on the Transient Pilot Questionnaire attached to your DD-175. May your weather be CAVU and your winds be tailwinds. ◄

There are two kinds of people who never amount to much – those who cannot do what they are told and those who can do nothing else.

Ace L.

Hoist cable SNAGGED

THE SH-2F crew was engaged in a practice HIFR (Helicopter Inflight Refueling) mission with a nonaviation facility ship. Winds were 30 degrees to port at 28 knots, and seas were running rough. One of the helo crewmen lowered the fuel sample bag after the copilot had looked at it and certified it to be a good sample.

Just as the fuel sample bag reached the ship's deck (to trade it for the hose), the deck pitched up about 20 feet and rolled about 15 degrees. Deck personnel let go of the hoist cable to maintain balance, and the cable became entangled in the taffrail.

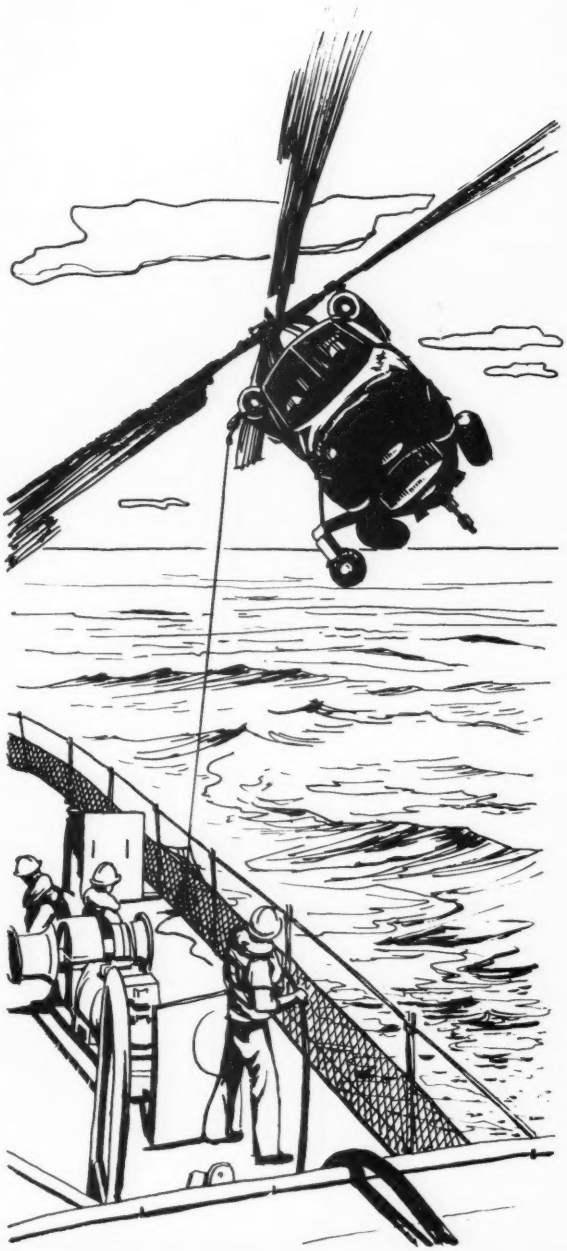
The hoist cable operator saw what was happening and started paying out cable. Simultaneously, the pilot lowered his hover as the ship pitched down. The pilot directed the copilot to arm and cut the hoist cable. The guillotine was armed and the copilot depressed his cable cut/cargo hook button. Nothing happened. The arming position was doublechecked, and a second time the pickle was pushed. Still no cut.

The ship pitched up on another swell, the cable became taut, and the helicopter rolled right. The hoist cable operator stayed with it and payed out more cable to give the pilot some maneuvering room. The pilot repeatedly depressed his cable cut button, and finally the cable separated. Once free, it took the pilot about 1 millisecond to get out of there and scoot for Homeship, where he landed safely.

The helicopter was shut down, and wouldn't you know, they could find absolutely nothing wrong with the hoist cable arming and cut circuits. Yet, when it was needed, it didn't work until repeated attempts were made. A less experienced crew could have been lost because of the glitch.

The culprit in the near-tragedy was the initial failure of a faulty cartridge. The head of the cartridge was removed from the breech of the guillotine assembly. About one-half was broken off and jammed inside the guillotine. The cartridge had its service life extended to 6 years and was due to expire the month after the incident.

The endorser of the report said: "Practice HIFRs must be conducted to maintain air and deckcrew proficiency. Nevertheless, the operation is hazardous, and aircraft commanders should carefully consider canceling or discontinuing the operation if environmental factors indicate unnecessary risk. A ready deck near the HIFR ship is recommended *for practice evolutions*." ◄



Letters

Re Strobe Effects

FPO, San Francisco – While reading through the APR '78 APPROACH, I noticed an article on "Strobe-Effect-Induced Seizures in Flight." Although this doesn't sound like it would have much effect on an E-2B squadron, especially the ground maintenance crew, the possibilities should be looked into.

For the directing plane captain, the possibility of becoming a victim of strobe effect seizure is very slim. However, for the plane captain removing the huffer hose, waiting to close the main entrance hatch, or to pull the chocks, the possibility becomes greatly increased. The reason being that he has to look through the rotating prop to see the plane captain's signals from the front of the aircraft.

The occurrence may not cause a seizure, but it does produce a hypnotic effect, a feeling of lost equilibrium. I wanted to reach out and touch the rotating object, and felt a nauseating feeling shortly after looking away from the prop.

The effects described are from personal experience, and talking with my coworkers I've discovered they have felt it also. Although prop safety is widely discussed in the E-2 community, very little is said about the possibilities of strobe effect.

I would like to suggest that each person coming into an E-2 squadron be briefed on this effect and that it become as important as prop arc safety. I think we need to reiterate warnings against any unnecessary, behind-the-aircraft involvement.

AD3 Paul J. Forster
Line Division Safety P.O.
VAW-116

Here's How

FPO, San Francisco – Kudos to the Naval Weapons Center, China Lake helicopter rescue crews (JUL '78 APPROACH) for their innovative SAR work up to 13,200 feet. The article raised eyebrows within this Marine Air Group, however, in view of a recent CH-46D mishap. The question is what form of supplemental oxygen is provided the pilot at the controls when operating above 10,000 feet to satisfy the requirement in OPNAVINST 3710.7H?

Maj J. B. Sramek
Safety Director, MAG-24

● To say the least, the oxygen system that the China Lake SAR uses is not a standard rig. They load on an oxygen bottle with enough capacity to service three disposable (Scott Aviation) face masks (4-6 hours for a single person). They are in the process of procuring a walkaround bottle to increase crewmember's mobility in the helicopter.

About Luck

Houston, TX – In a recent issue, CDR Tom Myers reflected on the various reasons why he had reached this stage in his flying career accident-free. However, he left out one major contributing factor – LUCK.

One morning I arrived at my office in the Flight Test Division of the Naval Air Test Center. At the time, I was working for Tom Myers, who was the Carrier Suitability Branch Head. He called and asked me if I would like to take his RA-5C project test flight that morning, since he had a schedule conflict. I did so, and an hour and a half later was starting my takeoff roll.

Five minutes after takeoff while on a 6-mile final, on the first of a series of planned automatic carrier landing approaches to Runway 31, my trusty steed caught fire (due to a BLC malfunction) and I found myself single engine, stalled, on fire, passing through approximately 600-800 feet in a nosedown attitude. The North American seat worked as advertised, and in a few seconds I parachuted into the Chesapeake Bay.

So, Tom Myers, don't you forget that you are accident-free and I am not because of a schedule conflict. And those of you who have not come face to face with a serious inflight emergency, remember that all of your skill and cunning cannot deny Lady Luck. It can happen to you. Be ready.

CDR Rick Hauck
Lyndon B. Johnson Space Center
Astronaut Candidate

Hydroplaning

Montville, NJ – As a former naval aviator and now a pilot for United, I have enjoyed your magazine, APPROACH. It pains me to see the same patterns of accidents we had when I was training 25 years ago being repeated time and again. In your July issue, the comment on the inside back cover about "The Big Picture" is very true. You must continue to try and educate the newcomers to this grand profession about the mistakes of the past. So many have shown us the way if we will only stop to read and heed.

I believe you have a very important typographical error on "The Hazard of Hydroplaning" which I am fairly certain you will hear about, but just in case . . .

The formula $VC = 9p$ should be $Vc = \sqrt{}$. The square root sign being rather important

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since for the A-7 at 210 psi it means the difference between 126 knots and 1890 knots. The results are obvious but hard to sort out if this is the first time you have been exposed to this material.

As a handy rule of thumb I use only thrust reversers on landing and no braking 'til below 100 knots on wet runways with tires of about 110 psi. This usually ensures breaking through the water barrier and no hydroplaning. This is good practice because reversing is more efficient at the higher speed end of the landing roll and becomes less so as the speed decreases. Compensating for this is the increasing efficiency at the lower speeds for brakes which aren't very efficient at the initial touchdown speeds.

T. J. Hurst
Captain, United Airlines

What About Helos?

NAS Lakehurst, NJ – In your AUG '78 issue we hear from "the reserve squadron safety officers" representing what is assumed to be the community in total. All types of aircraft are represented; wait, let me modify that, all types of FIXED-WING AIRCRAFT. What happened to all those folks flying in HS, HC, and HAL reserve squadrons?

Your magazine in the past has given us rotorheads better than average coverage, but this time your glaring omission smarts.

LT Mike Powers
HS-75

• Letters were sent to reserve helicopter squadrons requesting their comments just as they were sent to the fixed-wing squadrons. When no responses were received, some squadrons were contacted by telephone. Again, we received no response.

Because of deadline considerations and to ensure that information contained in the article remained timely, the decision was made to print the article without participation from the reserve helicopter community.

The approach to Runway 33. Note the high school and elementary school just to the right of centerline. Avoid getting low or to the right of centerline on this approach.

The approach to Runway 15.

The NAS Willow Grove Airfield Profile appeared in the August 1978 issue of APPROACH. During printing, the halftone negatives were reversed, resulting in incorrect views of the runways.

The correct views appear above. ◄

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approach

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CREDITS/Presently a mainstay of the Navy's anti-submarine warfare forces, this month's cover depicts a possible additional role for the S-3 — tanking the F-14 and other Fleet aircraft. The painting by C. G. Hodgson is through the courtesy of the Lockheed Aircraft Corporation. Pg. 2 Photo: VS-24; Pg. 27 Photo: NAS Miramar.

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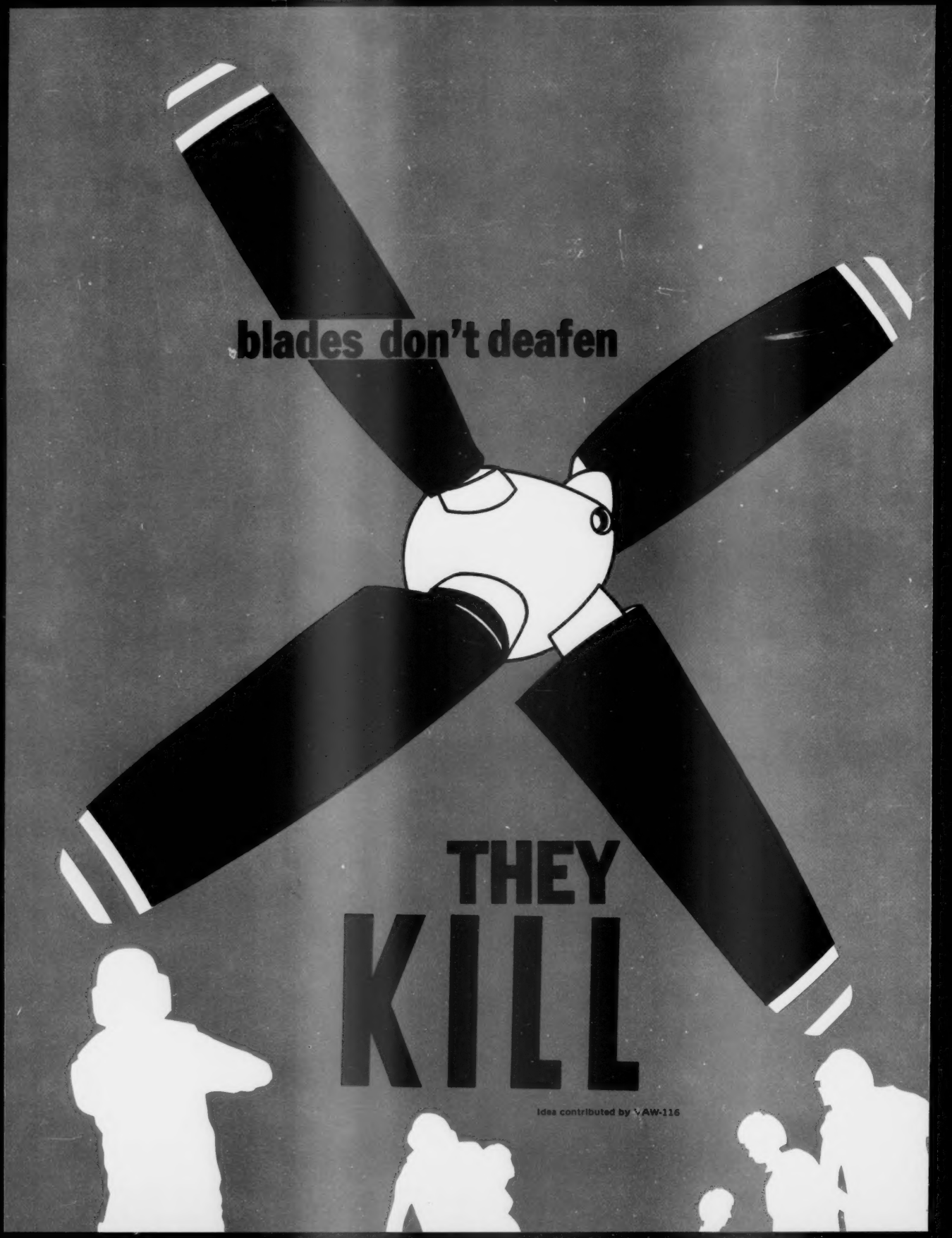
Idea contributed by AMH3 Kathleen B. Simpson, VP-31


blades don't deafen
THEY
KILL
Idea contributed by VAW-116